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1919/20

BIENNIAL REPORT
of the
BOARD OF TRUSTEES
of the
Agricultural College
of Utah

For the Years
1919 and 1920

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THE BIENIAL REPORT OF THE
BOARD OF TRUSTEES
OF THE

Agricultural College of Utah

FOR THE YEARS 1919 AND 1920

To the Governor and Legislative Assembly:

Ladies and Gentlemen: In accordance with law I herewith transmit on behalf of the Board of Trustees of the Agricultural College of Utah the Biennial Report for the years 1919 and 1920. In submitting this report I desire to record certain statements in connection with the institution which will interest not only the Governor and Legislature but the citizens of the State in general.

The College has not found it necessary to undergo any considerable readjustment to meet either war or post-war conditions. Organized as it is in close touch with the needs of the farm, the home, the commercial and the industrial activity of the State, it found itself ready to serve immediately during the war and it reverted to peace conditions without appreciable difficulty as regards its organization. As at present constituted, the major divisions of the College are as follows:

- The School of Agriculture
- The School of Agricultural Engineering
- The School of Home Economics
- The School of Commerce and Business
Administration
- The School of General Science
- The Experimental Division
- The Extension Division
- The Branch of the College
- The State Power Plant
- The Service Departments of Light, Heat
and Power, Buildings, Grounds.

The reports of each of these divisions and of all the departments are included later herewith.

The College is sound morally and educationally. No-

where throughout the land is there a cleaner and more wholesome environment than exists at the College and in Logan. The State is fortunate indeed in the location of its Agricultural College under moral and industrial conditions so desirable. Cache Valley constitutes a great laboratory of western agriculture, the superior of which exists in few places elsewhere. Here the thousands of our young men and women who come and go as students of the Institution have a most wonderful opportunity to study and live undisturbed and without subjection to the devastating social influences which too frequently characterize modern life.

The Board of Trustees is proud of the educational standing of the College. Graduates of the Institution in competition with those of the many excellent institutions of America invariably bring distinction to our Utah school. Throughout the West these choice young men and women are leading in the development of our great Intermountain Empire. They are worthy sons of the Pioneers. They are workers, free from the aloofness which too often characterizes the so-called educated man or woman. The common problems of life are their problems and they take their place among the honorable laborers of our commonwealth with strong hereditary and acquired moral character and strengthened by the partial mastery of the sciences and arts which underlie our industry.

Utah has cause to be proud of the achievements of the College.

The financial situation which confronts the College is of first importance at this time. The Institution is administered efficiently and economically with due regard for the tax burden of the public. Like all institutions it has experienced great difficulty, under conditions of greatly increased prices for practically all commodities and for labor and with increased enrollment, in maintaining itself under an income which has not risen with the rise in prices.

Due, however, to the earnings made during the war as explained by the President of the College, and very rigid economy, the College proper (not including Extension Division or Experiment Station work or the work of the Branch of the College), is able to hold its requests for the coming biennium below the allowance made for the last biennium. It does this at a definite sacrifice, however, as explained later, and it is hoped that the Governor and Legislature may see their way clear to grant the additional needs as indicated in the report of the President of the College so that the Institution may be enabled to perform the very

important service for the farmers of the State particularly which conditions make quite important.

The needs of the Extension Division and the Experiment Station are stated separately in this report. These are necessarily greater than for the past biennium for very obvious reasons. It is not necessary to emphasize the importance of these agencies in our growing State, so largely devoted to agriculture. No expenditure by the State is more important than that which provides county agents and similar other aids to the farmers on their farms. These agents are returning in measurable wealth to the State many fold the investment in them. Co-operating in the great Farm Bureau movement this service of the College is of inestimable value to our State. It is felt that the farmers through their recognized leaders will, if necessary, express to the Legislature their interest in the Extension Division and Experiment Station service which is primarily for their direct help. As with Extension Division and Experiment Station work so all other branches of the College work are thriving, including the work at Cedar City which is mentioned in detail later.

There is harmony among faculty and students and a commendable loyalty to the ideals of the College and the State.

The statement of the needs of the College, which follows, is recommended by the Board as conservative and necessary. It is believed that the requests should be granted in their entirety.

Very respectfully,

A. W. IVINS,

President of the Board of Trustees.

UTAH AGRICULTURAL COLLEGE

BIENNIAL NEEDS

College Proper

APPROPRIATIONS FOR 1919-20 BIENNIUM	PROPOSED APPROPRIATIONS FOR 1921-22 BIENNIUM
Barracks Building\$ 40,000.00	Special Maintenance .....\$210,000.00
War Fund Allowance..... 38,640.00	Grading, Water Connections,
Finishing Buildings 70,000.00	Sidewalks and Fences..... 3,200.00
New Farm Land..... 25,000.00	Farm Land 10,000.00
Vegetation House 2,000.00	Motor Transport and Artillery
Heating Plant 25,000.00	Laboratory 11,000.00
Tunnels 5,000.00	Purebred Livestock 9,000.00
Horse Barn 5,000.00	
Pressure Connections 10,000.00	
Redistributing System 3,000.00	
Rewiring 5,000.00	
Seed House 2,500.00	
Special Deficit Allowed..... 46,420.25	
<hr/> \$277,560.25	<hr/> \$243,200.00

UTAH AGRICULTURAL COLLEGE

BIENNIAL NEEDS

Experiment Station

APPROPRIATIONS FOR MAINTENANCE, 1919-20 BIENNIUM	PROPOSED APPROPRIATIONS FOR MAINTENANCE, 1921-22 BIENNIUM
General Maintenance .....\$100,000.00	General Maintenance .....\$150,000.00

Extension Division

General Maintenance\$100,000.00	General Maintenance\$210,000.00
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State Power Plant (See Note)

General Maintenance\$ 26,450.00	General Maintenance*\$41,700.00
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* This amount includes a charge for maintenance during three months of 1917-18 which by mistake was not appropriated for by the Legislature of 1917.

Note: The State Power Plant while under the jurisdiction of the College is for the service equally of the State Capitol, the University of Utah, the School for the Deaf and Blind, the State Industrial School, the Ogden Armory, the State Prison and the College.

BRANCH OF THE AGRICULTURAL COLLEGE

BIENNIAL NEEDS

APPROPRIATIONS FOR 1919-20 BIENNIUM	PROPOSED APPROPRIATIONS FOR 1921-22 BIENNIUM
Maintenance, Supplies and Equipment\$ 26,025.00	Maintenance, Supplies and Equipment\$ 66,000.00

Biennial Report of the President

1919, 1920

To the Board of Trustees of the
Agricultural College of Utah:

I have the honor to submit herewith the report of the Agricultural College of Utah for the biennium 1919 and 1920, the report also including estimates for the ensuing two years. You will find in the following pages the separate reports of the different administrative and instructional units of the College as follows:

- The Divisions or Schools
- The Agricultural Experiment Station
- The Extension Division
- The Branch of the Agricultural College
- The Departments of Instruction
- The Library
- The Departments of
 - Grounds
 - Buildings
 - Water, Heat, Light and Sewerage
- The State Power Plant
- The Office of the Financial Secretary.

Education Since the War.

Two years have elapsed since the conclusion of hostilities of the Great War. During that time the College has experienced, with all other colleges, the difficulties incident to readjustment and reconstruction. Courses have, by virtue of our war experience, and the altered attitude of the people or altered industrial conditions, been considerably changed, although it is remarkably true that the war and reconstruction tended essentially to confirm the wisdom of the act creating the College. During the conflict the whole nation in its industry and education, as elsewhere, sought diligently to discover what was necessary and foundational and what was superficial and unnecessary. No greater tribute can be paid the College than to say that it was found to contain the essential qualities needed during our struggle. Under the merciless test of war the land-grant colleges were found to be essentially sound. The

oddities of education, the fanciful and unpractical, the extremely classical, so-called, the conventional courses so common in other systems of education which are unrelated to human needs—these were noticeably absent from the College courses. Training for life's duties including the essential manual and mental processes was and is the motive in our work. Since the war there has been a very noticeable new interest in education. Increased prices for practically all agricultural products, up until within the last year, have caused a widespread prosperity on the farms. More farm boys and girls have, therefore, been enabled to attend College. Prosperity in the mercantile and industrial way has likewise manifested itself.

One of the most serious problems with which we have been and are confronted is the financial one of conducting the Institution, with greatly increased enrollment, upon practically the same maintenance allowance. Indeed there has been as between the calendar years 1918 and 1919 an actual decrease in maintenance income. Prices of all commodities have gone up, in some cases over 100 per cent. The College has exercised most rigid economy with the result that the period has been tided over with only temporary injury to the work. A continuance, however, of the present restrictions would very seriously jeopardize many important phases of our work.

The College earned for the State during the war, when the Student Army Training Corps was maintained under War Department supervision, slightly more than \$69,000. This earning is what has enabled us, with the exercise of the economies mentioned, to meet so satisfactorily the present stringency. It is most gratifying to be able to report that, due to the earnings mentioned and to the exercise of careful economies, the present requests for the maintenance of the College itself for the coming biennium can be held below the appropriations made covering the last biennium. The special needs of the Extension Division and the Experiment Station will be, however, above those of the last biennium. The requests for the Extension Division come directly from the farmers themselves. This work represents in a direct way the farmers' and housekeepers' share of the State's higher education. Our requests for support of this work have been held below the actual necessities in certain counties but by uniting the work in outlying counties and by other devices the work, I think, can be maintained with the requested appropriation, to the satisfaction of the farmers and the farm women during the next two years. Extension work, such as is done by the College on the farms

in the various counties, is most indispensable. The farmers and the farm homes deserve more from the State, not less, than we are now expending in their behalf.

I may speak with equal assurance regarding the Experiment Station. Here the results of the work go directly to the farmers. The present rating of the Station, as well as of Extension work, is a source of satisfaction to all our citizens. It can be said confidently that no state is securing better returns from its research and Experiment Station work.

Training Farmers and Housekeepers.

The main function of the College is, directly and indirectly, to train farmers and housekeepers. To bring agriculture to a place of dignity and keep it there, to make it profitable as far as lies within the possibility of education, to bring education into the home by training the future housekeepers in the tremendously delicate and important tasks of household management and of child rearing, to train teachers for high school work in these fundamental branches of our education as well as in the trades and industries, to not only train the future farmers and housekeepers, but to carry all knowledge onto the farm and into the homes by extension and to search constantly for new truth to aid agriculture and the home by research—these are the basic tasks of the Agricultural College of Utah. It is not a task limited to the academic or scholastic alone, although it must include the golden fruitage of the best scholarship, but it is the human, social problem of seeing that these results are attained. In this sense the College is built directly to aid agriculture. In this sense our work is missionary in its spirit; it is an arm of the Nation and the State aiding the great business of farming. Nothing is holier than such a mission. It deals with the permanent success and happiness of the majority of our population.

To Train Teachers and Industrial Leaders.

It should be emphasized that in the State's economy it is wise to confine respectively to its two higher institutions of learning the special phases of work for which they were created by law. The Agricultural College of Utah, in addition to other work required of it by law, should, in harmony with good methods, assume the responsibility of doing what is expected of higher education in Utah in training leaders, including teachers, in agriculture and home economics, and the trades (or mechanic arts). If

this work is done elsewhere it means substantially the duplication of equipment in agriculture and home economics, and in trade work at heavy expense at other places. On the other hand, all the expensive equipment by way of buildings and apparatus being already at the College, it is the most obvious common sense to have given here the comparatively small amount of work in agricultural pedagogy necessary to enable our students and graduates to teach. Our own teachers can well do most of this as part of their duties, thus avoiding employing extra help with some exception. It is sound policy for every institution of higher learning to give such instruction that students graduating are able and competent to teach what they have learned. It is false and indeed impossible to avoid this logic, based both upon reason and experience. Fortunately there is quite general agreement upon this matter among practically all the educational leaders, and particularly agreement between the executives of the University and the College.

Commerce and Business Administration.

The Agricultural College of Utah was the first institution in America to offer a degree in Commerce. During the thirty years, practically, of our experience in this field we have found that not only is this work related in a valuable way to the training of office and business employees and managers, but is of direct significance in agriculture. Markets, farm organizations, rural banking and finance, storage and transportation economics, cost accounting in farming, farm bookkeeping and other related work continue to be a constant necessity in training our agricultural leaders. Since the College established this work thirty years ago, it is interesting to note that it has found entrance into many of the older and more conservative colleges of the country as well as into newer state institutions.

The Trades and Agricultural Engineering.

Under our federal charter it is necessary that the College emphasize mechanical arts. This it has done during its entire history. It regularly trains for practical work, carpenters, blacksmiths, foundry workers, farm mechanics, auto and tractor experts and machinists. Its training in agricultural engineering relates directly to irrigation and drainage, architecture, and construction of farm buildings, cement work and highway construction, surveying, rural sanitation and public health, agricultural manufacturing and technology and related work. Here we deal not only with

engineering as it relates to agriculture but this work has a direct bearing upon new industries and the development of our great latent natural resources. Our Agricultural Engineering Experiment Station will continue to contribute largely to these ends.

The Sciences Which Underlie Our Industry.

The College has maintained from the first strong major departments in chemistry, physics, zoology and entomology, geology, botany, bacteriology and in economics, history, English, mathematics and related branches. These studies relate to all that is enduring in modern life and activity. The College record for achievement is in no small measure due to proficiency in such work. Leadership under modern conditions of competition, implies a very exacting appraisal of mental and moral qualities. Our graduates have met this exaction in large measure by virtue of sound foundational training in the arts and sciences which underlie all civilization. The maintenance of strong departments in these subjects cannot be too strongly emphasized as a measure calculated to insure the permanence and stability of the work of the Institution.

The Animal Industry and Dairying.

Our agriculture in Utah is based upon animal husbandry and dairying. Here essentially we must succeed or our future is uncertain. There must therefore be the best of training available for the young men in range management, beef production under both range and farm feeding conditions, wool and mutton production, including the grading and sorting of wool, hog raising, poultry husbandry and very emphatically in dairying. We must soon get away from the abnormal stimulus due to war and reconstruction which now unbalances our agriculture. Excessively high temporary prices will soon disappear. When we reach stability, dairying and dairy manufacturing must play a much larger role in our agriculture. Adapted as we are to the production economically of the best grade of dairy stock and of dairy products we must soon produce these in a much greater quantity. Already an insistent demand in the form of petitions has come to the College for more opportunity for training along the lines of butter and cheese production. In no other single way, I may say, can the College be more useful than in meeting this demand.

Irrigation and Dry-Farming.

The College is in the center of the great Intermountain irrigation and dry-farming area. Nowhere else on earth so readily accessible do there exist such agricultural and engineering enterprises, including mammoth irrigation structures, as are within a few hours' ride of the College. The humble efforts of the Pioneers have resulted, in a little over half a century, in amazing results. And the most conservative economic thinkers predict that the next few decades will witness achievements in irrigation reclamation far beyond our present anticipations. Here the College must lead or neglect an opportunity of surpassing importance. The irrigated crops will be increased in number and produced more efficiently as the art is mastered more fully. We can more than double the 3,250,000 acres now under irrigation in Utah and Idaho alone by proper retention devices, reorganization of irrigation companies to insure more economic distribution of our gravity streams, pumping, by better main channels and unification of laterals and by scientific application of the water to the crop. Our greater development as a State pauses only until we can master these details. Dry-farming will extend further our boundaries and our wealth. Production under limited rainfall conditions is established. It needs now only careful adjustment to our soil and other physical conditions and proper practice and management in order to become a larger factor in our western life.

Training Disabled Soldiers.

The College is proud of its ability to be of service in re-training hundreds of our men, disabled during the war, for usefulness in one or another trade or industry. Our contract with the Federal Board for Vocational Education, Division of Rehabilitation, provides for full reimbursement to the College in this important work in the interest of the young men who, by reason of their heroism and devotion to our country, will always be the object of our eager sympathy. A special report occurs later in this document indicating the success which has accompanied our effort in this direction.

Training for National Defense.

The land-grant colleges of America were conceived at a moment of great national peril incident to the Civil War and were founded immediately afterwards. They are dedi-

cated to national service and defense. Training in military science and tactics has been incorporated in their courses of study from the first. Since the late war this work has been reorganized to suit conditions as determined by the war. The Reserve Officers Training Corps now established at the College offers exceptional advantages to our young men and at the same time meets the needs of the Federal Government. We are favored in having established at the College three units in the Reserve Corps: Infantry, Motor Transport and Coast Artillery. The records of our graduates and former students during the war was a source of pride to the State. Under present conditions we can even more satisfactorily than in the past fulfill our obligations to the nation in a military sense.

The Spirit That Directs Our Effort.

Permit me to say that never before has such a spirit of loyalty and devotion characterized our work. This manifests itself in both faculty and students. Free from all the animus of political or sectarian contention and from the evils of social stratification we are proceeding to do as quietly and well as possible the work entrusted to us. I believe that the Agricultural College of Utah is the home of as clean and vigorous a democracy as exists anywhere in America. We enjoy an unusual confidence from the public. Nowhere else have I seen such a manifestation of confidence by the people in the integrity and unsullied purpose of a college. This sympathy and confidence is worth more to us than millions of endowment without it.

May I be permitted also to express for the faculty the appreciation we all feel of the personnel and representative character of the Board of Trustees? The united purpose of the Board and the unusual experience and judgment which they bring to the College is a great strength to the Institution. The time of the members of the Board given freely to the State is of great value in the management of its affairs.

The present State administration has dealt very sympathetically with the College and its needs. To Governor Bamberger our thanks are due for the constant appreciation he has had and expressed in our work.

Our Financial Needs.

I quote from our statement, previously approved by the Board of Trustees, made to the Governor in regard to financial needs for the coming biennium.

"I herewith transmit on behalf of the Board of Trustees the estimates for the maintenance of the College during the coming biennium. These are tabulated according to your request showing the appropriations for the last biennium in comparison with the requests for the coming biennium.

"You will note that for the College proper (not including the Extension Division, Experiment Station, The Branch of the College, and the State Power Plant) our requests represent a decrease over those of the last biennium. This decrease is made at the expense of many things considered quite necessary but which, under present conditions, we feel we should, if necessary, sacrifice. The present request for the maintenance of the College proper is being held so low furthermore because of the earning which the College was able to make during the war when the institution, under its War Department contract, trained a large number of soldiers. This earning of \$69,814.44 which, as provided in our contract, was invested in permanent equipment for the College, naturally reduces our present necessities.

"While our requests for College proper maintenance can be held below the appropriations of the last biennium for the reasons stated and by sacrifices which it is possible to make, necessarily the requests for the Extension Division, the Experiment Station and the State Power Plant are considerably larger than those previously made. These increases are made necessary, due to the greatly increased cost of supplies and equipment and the increased cost of labor. The requests in the case of the Extension Division represent a direct request from the farmers themselves for this work. Nothing, I may say, is so contributing to Utah's agricultural prosperity as is this Extension activity which is conducted in co-operation with the Farm Bureaus, the United States Department of Agriculture and the County Commissioners of Utah. The investment here by the State returns to the farmers many fold the cost. The saving and increased earnings by the farmers as a result of the activity of the county Extension workers is measurable to many times the investment per county each year by direct testimony of the lead-

ing farmers. The costs, therefore, to support such work are thoroughly worth while. I do not hesitate to say that of all educational expenditures by the State Legislature this is considered by the producers the most important and indispensable, important as the others are. Likewise the work of the Experiment Station directly in relation to the farmers' need represents a service to them from which they very greatly profit, and which in a true sense supports and sustains the others' work.

"In order to keep the College operating during the past biennium under the condition of greatly increased costs and with a greatly increased enrollment of students with a maintenance fund practically stationary and in the case of the year 1919 representing an actual reduction compared with the previous year, the Board of Trustees has necessarily been obliged to incur an indebtedness, which is included in our requests.

"For the maintenance of the College proper our requests, I am sure you will be interested to know, are very considerably under those of other institutions in nearby states. Information sent by the presidents of agricultural colleges is given below. The institutions mentioned are taken as typical of colleges confronted with conditions similar to our own. Similar financial conditions exist, however, in practically all of the state institutions. In fact, in the larger states the necessities of educational institutions in some cases proportionally surpass those mentioned.

Agricultural College of	Annual State App'n. for Maintenance 1919-1920	Increase in State App'n. for Maintenance, Either Granted or Requested
Oregon	\$513,322	\$680,000 per year add'l. granted in 1920 (income more than doubled).
Montana	127,500	1½ mills being asked for the maintenance of higher educational institutions and \$5,000,000 in addition for buildings. Montana A. C. apportioned \$1,500,000 for buildings. On same basis the College would get \$270,000 add'l. annually for maintenance.
Colorado	188,367	Asking for 1 mill for four state institutions. Agricul. College share of this revenue would be from \$400,000 to \$500,000 annually.
Kansas	844,500	One-third additional funds being asked for interior instruction, station and extension. This would amt. in interior instructional work to approx. \$280,000 annually.
Utah	128,000	

"It is emphasized that the requests herewith submitted provide for bare maintenance of the College. The following important appointments will of necessity be impossible unless funds in addition to those included in the budget statement are available. Many of the items of work which would be possible in case the appointments as indicated can be made are urgently requested by petition of farmers and by the nature of our agricultural conditions. I trust it may be possible to grant these additional requests, although we refrain from putting them at this time in our budget.

Assistant in Cheese and Butter Making	\$ 1,800.00
Assistant in Sheep Husbandry	2,000.00
Instructor in Department of Markets.....	2,000.00
Instructor in Geology	1,500.00
Purchasing agent in Secretary's office....	2,000.00
Woman's Adviser (in charge of social work)	2,000.00
Instructor in Home Nursing	1,500.00
Supplies and equipment for these de- partments	7,200.00
	<hr/>
	\$20,000.00
For Biennium	\$40,000.00

"It is hoped that a permanent fund may be created by appropriate legislation which will make it unnecessary for the higher institutions of the State to appear constantly before the Governor and Legislature for special appropriations. A definite continuing appropriation upon which both institutions could count from year to year would enable us to plan more accurately and carefully. I hope that such legislation is possible at the coming session of the Legislature.

"Urgent needs of the College but which are not included in our requests at this time are listed below. It is regrettable that these items cannot be included at this time. I express the hope that the Governor and the Legislature as they consider all the circumstances may find a way to aid in part at least in the directions indicated.

Girls' Dormitory.

Finishing heating plant.

Finishing third floor of Plant Industry Building.

"You will note in an attached sheet the requests covering the needs of the Branch of the Agricultural College which is experiencing a healthy growth and is in excellent condition otherwise. Additional building requests by the Branch of the Agricultural College are not included for reasons stated above. The Governor and the Legislature may see their way clear to consider certain of these needs, including a Woman's Building for instruction and student housing and a residence for the Principal."

The needs of the College as tabulated and attached hereto are expressed conservatively. These necessities are very strongly urged as vital to the continued usefulness of the College. The Governor and the Legislature understand without extensive discussion the relationship of the College to the producers of the State. Appreciating very keenly the tax burdens of the public, our requests are regulated accordingly.

Very respectfully submitted,

ELMER G. PETERSON,

President of the College.

UTAH AGRICULTURAL COLLEGE

Biennial Needs—College Proper

APPROPRIATIONS FOR 1919-20 BIENNIUM	PROPOSED APPROPRIATIONS FOR 1920-22 BIENNIUM
Barracks Building\$ 40,000.00	Special Maintenance .....\$210,000.00
War Fund Allowance..... 38,640.00	Grading, Water Connections, Sidewalks and Fences..... 3,200.00
Finishing Building 70,000.00	Farm Land 10,000.00
New Farm Land..... 25,000.00	Motor Transport and Artillery Laboratory 11,000.00
Vegetation House..... 2,000.00	Purebred Livestock 9,000.00
Heating Plant 25,000.00	
Tunnels 5,000.00	
Horse Barn 5,000.00	
Pressure Connections 10,000.00	
Redistributing System 3,000.00	
Rewiring 5,000.00	
Seed House 2,500.00	
Special Deficit Allowance..... 46,420.25	
\$277,560.25	\$243,200.00

UTAH AGRICULTURAL COLLEGE

Biennial Needs—Experiment Station

APPROPRIATIONS FOR MAINTENANCE, 1919-20 BIENNIUM	PROPOSED APPROPRIATIONS FOR MAINTENANCE, 1921-22 BIENNIUM
General Maintenance .....\$100,000.00	General Maintenance .....\$150,000.00
EXTENSION DIVISION	
General Maintenance .....\$100,000.00	General Maintenance .....\$210,000.00
STATE POWER PLANT—(See Note)	
General Maintenance\$ 26,450.00	General Maintenance .....*\$41,700.00

* This amount includes a charge for maintenance during three months of 1917-18 which my mistake was not appropriated for by the Legislature of 1917.

NOTE: The State Power Plant while under the jurisdiction of the College is for the service equally of the State Capitol, the University of Utah, the School for the Deaf and Blind, the State Industrial School, the Ogden Armory, the State Prison, and the College.

BRANCH OF THE AGRICULTURAL COLLEGE

Biennial Needs

APPROPRIATIONS FOR 1919-20 BIENNIUM	PROPOSED APPROPRIATIONS, 1921-22 BIENNIUM
Maintenance, Supplies and Equipment\$ 26,025.00	Maintenance, Supplies and Equipment\$ 66,000.00

SCHOOL OF AGRICULTURE

To the President of the College:

Sir: I have the honor to report herewith the School of Agriculture for the past biennium.

The School of Agriculture is in a prosperous condition. The morale of its faculty is excellent. The students are earnest and have a very fine spirit.

The Junior and Senior classes show the effect of the war. These classes are small. Very large Freshman and Sophomore classes have been registered, however, and a number of the Junior College courses in science and agriculture are taxed to capacity. A large number of vocational students have been registered in the School of Agriculture, but the proportion of college students to vocational students is gradually increasing.

The grade of teaching done in the School of Agriculture is probably the best in its history. The courses deal with the fundamentals and are at the same time practical. In most of them, however, and in the complementary science courses, there is insufficient opportunity for students to come into contact with actual agricultural conditions and operations. Consequently our students are short on experience. As a result they lack the self-confidence to take many fine opportunities and when they do take them they make many expensive mistakes which an adequate college course should teach them to avoid. We need a farm, or rather farms, on which any student can get that experience so necessary in qualifying him properly for his life's work. We need greenhouses in which students in botany, agronomy, horticulture, zoology and entomology can get actual year-round contact with living plants and the pests which prey upon them. Until we get such equipment we shall keep turning out students who are not adequately trained to serve themselves, the state or the nation.

This year members of the faculty of the Schools of Agriculture and Agricultural Engineering are giving a series of lectures and demonstrations in agriculture to those enlisted men at Fort Douglas who wish it. Although this course has inconvenienced the faculty members concerned very much, it is a pleasure to report that they consider this a splendid avenue of service and are willingly making the adjustments necessary to render it.

The third floor of the Plant Industry Building and some rooms on the lower floors are still unfinished. This space is needed badly and it is hoped that by next fall these rooms may be available.

Respectfully submitted,

GEO. R. HILL,

Director, School of Agriculture.

SCHOOL OF AGRICULTURAL ENGINEERING AND MECHANIC ARTS

To the President of the College:

Sir: I have the honor to report herewith the work of the School of Agricultural Engineering and Mechanic Arts for the past biennium.

I am pleased to report that the School of Agricultural Engineering and Mechanic Arts, at the present time, is in the very best of condition. We have just completed the registration for the winter quarter and find that in addition to the collegiate students, our shops are now filled to overflowing; in fact, they are not able to take care of the number of men who want the work. It has been found necessary, in the machine shop and forge shop, to limit all men to three periods per week in order that all of them who can may be able to take some work in these departments.

Our shop work is hindered some due to the fact that men in advanced work would like to take machine work and forging five periods per week instead of three. It would be of very great help to our school if the machine shop could be extended approximately 80 feet in order to give us additional room to take care of the men in these departments.

The Federal Board for Vocational Education was generous enough to lend us the following machines which have been set up in the machine shop, but in order to put these machines in, it was necessary to take out one of our old lathes and one planer in order to make room enough for the machines they lent us. We received the following machines from the Federal Board:

- 4 16-inch lathes.
- 1 turrett lathe.
- 1 gap lathe.
- 2 drill presses.
- 1 power hack saw.
- 2 grinding wheel stands.

Also, about six chucks for the lathes which we already had, and several hundred dollars worth of small tools and equipment. By adding these machines to our Machine Shop it is now so crowded that it is almost unsafe for the men to work so close together.

The work in irrigation and drainage is growing very rapidly and we find it a decided handicap not to be able to equip our present irrigation laboratory with the water-measuring devices needed in order to visualize the instruction in irrigation laboratory work.

It has been found necessary also, due to the crowded condition of the shops, to handle our large class in automobile work in the irrigation laboratory room in the Agricultural Engineering Building.

In the spring of 1920, Prof. L. R. Humphreys resigned, which left us without an instructor in farm machinery work. This work has necessarily had to be neglected thus far this year, due to this fact and also to the fact that we have no space in which to take care of the storage of farm machinery necessary for handling the course.

While the fields embraced by the different departments are all yet quite new, we are gradually systematizing and standardizing the work so that each year sees a greater appreciation for it.

Respectfully submitted,

RAY B. WEST.

SCHOOL OF COMMERCE AND BUSINESS ADMINISTRATION

To the President of the College:

Sir: The following is a brief statement of the condition of the School of Commerce and Business Administration for the biennium just closed and a forecast as to what the needs of the next biennium are likely to be.

Attendance—The registration in the School has been surprisingly large when we take into account the fact that other divisions of the College get most of the advertising and funds. Last year saw the largest registration in the history of the School and already this year that number has been exceeded. By the end of the year this registration will undoubtedly be further increased.

Equipment—The completion of the new buildings on the campus has released enough classrooms so that our needs in general are well met, but there is great need of a more effective grouping of the rooms used by the School of Commerce so that the unity and distinctiveness of the work may be better appreciated by the students and public. The adding machines, posting machines, typewriters, calculators, etc., are now being worked to their maximum capacity from 8 o'clock till 5 o'clock daily and students are being turned away from the work on account of inability to get the use of a machine. Additional funds will undoubtedly be needed in that department to keep the machines in good condition and to purchase new ones.

Course of Study—In the work of organizing the various departments of the School some important progress has been made. Two new departments have been created, viz., Markets and Business Administration. In the Department of Markets we have succeeded in establishing closer relations with the Bureau of Markets from which we get some funds, and the Agricultural College Experiment Station which has provided us with traveling expenses in connection with our market field work. This co-operation, I believe, will be mutually advantageous.

The Department of Business Administration is now in its first year, but promises to become one of our essential departments.

The Department of Accounting has continued to show exceptional growth in the last few years and will undoubt-

edly grow more rapidly in the next few years if continued support is given financially by the College.

The Departments of Political Science and History have also shown a healthy and steady growth. The work in agricultural economics, general economics and sociology has increased far beyond the ability of the present permanent staff to conduct the work satisfactorily. The sections are too large and must be divided another year in order to get the maximum efficiency.

Besides the general courses in economics, courses in banking, corporation finance and taxation are in demand.

The general work of the School of Commerce and Business Administration is, I believe, to a greater degree than before dovetailing into the work of the other divisions of the College and will succeed in my opinion very largely in proportion as it does this in the future.

Faculty—Our faculty this year suffered a decided loss when Prof. Z. B. Wallin left us to go to Ohio University. He was an excellent teacher and a thorough high grade student. His work in marketing was very well done. He was offered a much higher salary than we were paying him and the inevitable happened.

Dr. William L. Wanlass, a graduate of Johns Hopkins University, in political science, has this year been employed to take charge of the Departments of Markets and Business Administration. He is well trained and a good teacher and will no doubt be a valuable addition to our staff.

Another valuable addition to our faculty is that of Miss Cecelia Kays, who has her master's degree from Stanford University in addition to a great deal of training in other institutions and in practical affairs. She is unusually well equipped for the work she is doing in stenography and business English. Her work this year is quite satisfactory.

Mr. Wilbur E. Thain has returned to us after a year's work in Wisconsin University. He is now well equipped to render valuable service to Prof. P. E. Peterson in the Accounting Department. The school has been materially helped by the services of J. B. Bearnson, a man with a master's degree from Stanford, who has been available for two courses in our School due to the fact that he was stationed at the College by the Government to take charge of Federal Board men.

The work in advertising and salesmanship has received a decided stimulation by the work of Prof. D. E. Robinson. He is "making good" in this work.

Judge Asa Bullen of Logan City Court has conducted the work in commercial and irrigation law. Prof. Daines

in the Department of History, Dr. A. H. Saxer in graphics and investments, and Prof. Pederson in business English, have all helped to enrich the work of the School of Commerce.

Need—The most important need of the School of Commerce for the next biennium and a need which must be met if the school keeps up with its present rate of growth is the addition of at least one more well trained man. We need a man who is not only a scholar but one who can teach, for the greatest need is after all in good teaching. Another need is about \$500.00 per year for additional help which can be taken care of on the pay roll.

The excellent work our graduates are doing and the abundant promise that they will be in great demand in the future, leads me to believe that the State of Utah is amply justified in continued liberal support to this division of the Agricultural College.

Respectfully submitted,

GEORGE B. HENDRICKS,

Director, School of Commerce and Business Administration.

SCHOOL OF GENERAL SCIENCE

To the President of the College:

Sir: The following table gives the enrollment in the School of General Science for the last three years:

	Graduates	Seniors	Juniors	Sophomores	Freshmen	Vocational	Total
1918-19	5	11	8	17	42	22	105
1919-20	3	11	12	27	67	18	138

Students who have not decided what their life work is to be when they enter the College, are usually assigned for registration to the School of General Science. Their course is planned along broad lines, and they are encouraged to decide definitely what they expect to follow as soon as possible. The spirit of the Institution usually carries them over into the industrial lines, and they are often found registering the following years in the Schools of Agriculture or Home Economics, Commerce or Agricultural Engineering and Mechanic Arts, and finally graduating from these schools.

There are some students, however, who expect to follow law or medicine, and the best professional schools of the country require of their entering students the completion of a college course. Where these prospective lawyers and doctors expect to practice in rural communities, this general preparatory course can well be taken at the Agricultural College. Our strong faculty and well equipped laboratories, although provided primarily for the technical students, are available and in addition to these science courses, very good work in English, economics, history, applied art, etc., is to be had.

It is, no doubt, due to the fact that the technical and immediately useful courses of the Institution are preceded by the courses offered in the School of General Science that the Institution is something more than a mere trade school, thumb rules and empiricism being replaced by well-established and thoroughly understood laws. The attempt is made by the Institution to help men prepare themselves not only to make a living, but also to train so that they may be able to enjoy life in full measure. It is the School of

General Science that is providing the cultural side of the training of all of the students of the College.

Respectfully submitted,

FRANKLIN L. WEST,
Director, School of General Science.

SCHOOL OF HOME ECONOMICS

To the President of the College:

Sir: I have the honor to report herewith the School of Home Economics for the past biennium.

The past biennium has seen a remarkable growth in the School of Home Economics. There has not only been an increase in attendance, but we have at the same time raised the standard and quality of instruction given. This is especially true in the courses offered to our Junior and Senior students, and we feel that the standards maintained in these courses compare favorably with those of any institution of similar character in the West.

Too much credit cannot be given to the present teaching staff for the efforts they have put forth to attain these ends. While the maintaining of high standards is a worthy objective to be striven for in any College, the writer feels that this can be overdone, especially when such procedure removes certain fundamental departments entirely from the reach of the average Freshman or Sophomore student. To overcome any tendency in this direction and to provide those courses which experience indicates every Freshman and Sophomore girl should have, your director suggests the following changes in the courses offered by the Department of Household Administration and the Department of Foods and Dietetics.

The course in home nursing is entirely inadequate to meet the demands upon it, especially at the present time when public health work has assumed the importance and proportions that it has. The course must be entirely revised and enlarged. This will necessitate the employment of an additional graduate nurse, as well as providing and equipping a laboratory wherein the work can be given a proper setting. The importance of such a course, the number of students which it will probably reach and the cost of the necessary laboratory equipment can be set forth in a separate report if desired.

The prerequisites required at the present for the first collegiate course offered for the Department of Foods is such that it places it entirely beyond the reach of any but the most ambitious Sophomore, and to the average student only in the third year of her college work. This condition should also be remedied and a course offered in foods that is available to the average Freshman or Sophomore student. There will be a heavy enrollment in such a course,

which will add materially to the teaching load of the Foods Department and will also call for an increased appropriation for laboratory supplies and maintenance. The present laboratory space will be adequate provided all equipment is put in serviceable shape.

It should be kept in mind that while such courses as mentioned above can be given only at considerable expense to the Institution, they will serve to relieve the congestion that now exists in certain other departments of the College. Work along the lines above mentioned will greatly increase our usefulness to the State by enlarging the field available to our Freshman and Sophomore students. It will in no way detract from the high standards now maintained at the College.

Respectfully submitted,

A. H. SAXER,

Acting Director, Home Economics.

SUMMER SCHOOL

To the President of the College:

Sir: I have the honor to report herewith the Summer Quarter sessions of the Utah Agricultural College for the last biennium.

The total attendance for the Summer Quarter of 1919 was 241, while that of 1920 was 332. They came from the following localities:

Utah by Counties	1919	1920
Beaver	5	8
Box Elder	5	1
Cache	143	149
Carbon		1
Duchesne	1	2
Davis		3
Iron	2	3
Juab	5	3
Kane	3	
Millard	3	3
Sevier	2	4
Sanpete	6	3
Salt Lake	13	22
San Juan	1	1
Summit		5
Tooele	1	2
Uintah		3
Utah	11	18
Weber	15	14
Washington	2	3
Wasatch		2

Other States	1919	1920
Arizona		6
Colorado		24
California		4
Georgia		1
Idaho		18
Indiana		2
Illinois		2
Iowa	1	2
Kansas		3
Massachusetts	1	2
Minnesota		3
Michigan		1
Nevada	1	
New Mexico		3
Oklahoma		1
South Dakota		1
Texas		1
Wisconsin		1
Wyoming		5
Other Countries—		
Australia	1	
England		1
Persia	1	2

Instruction was given in the following subjects. The numbers refer to the number of students in each class.

	1919	1920
Accounting a	1	4
" b	1	
" 1a		4
" 2		5
" 5		3
" 6		1
Agronomy		
Soils	2	1
Cereal Crops	5	21
Seeds and Weeds 1a.....		21

	1919	1920
Art		
" For H. S. Teachers.....	4	3
" 23 H. S. Teachers	1	2
" 25	2	
" 27	30	14
" 5b		2
Auto Mechanics		
" "	4	
" " a		15
" " b		4
" " c		4
" " 1		7
Bacteriology 1	11	
Bookkeeping		17
Carpentry		
" a	1	1
" d	5	14
" 12	5	3
Chemistry		
" Inorganic	9	17
" Organic	9	15
Qualitative	4	5
Quantitative		4
Chemistry 10		3
Concrete Construction		25
Child Welfare	10	
Dairy 3	8	
Economics 2	19	18
Education		
Principles of Education..	20	40
Problems of Education...	17	
Ed. Psychology	30	44
Primary Methods	31	19
Handwork	35	29
History of Education.....		16

	1919	1920
Public Speaking		
Extemporaneous Speaking	2	
Vocal Expression	12	
Public Reading	1	
English		
English Novel	14	
English Literature	8	
College Composition	5	
American Literature	27	20
Advanced Writing	5	
Advanced English		
Grammar	7	
Modern Drama	9	
Shakespeare	6	
English 7		8
" c		8
" 27a		21
" 27b		3
Nineteenth Cent. Poetry		9
Contemporary Poetry		12
Project Management	1	
Farm Management	5	
Farm Mechanics		
For Smith-Hughes Work	7	
Foods		
Food Engineering		4
Special Diets.		2
Foods for the Family	9	
Forging		20
History		
" 12a and 12b	8	
" 4a	12	
" 4b	16	
" 4c		15
" 4d		22

	1919	1920
Household Administration		
Home Nursing	19	20
Practice House		6
Library Science	6	
Machine Work		18
Mathematics		
" a	2	10
" b	4	
Algebra	2	13
Mathematics 6		18
Arithmetic		13
French		
" 1	3	
" 8	2	1
Music		
Theory	5	
Harmony	5	4
Choir	22	7
Music for Supervisors	3	
Music for Grade Teachers	12	12
Nature Study		17
Physics	8	10
Physiology	3	11
Political Science		
" " 9		21
" ' 1c		22
Range Management		19
Sanitation		
" 1	14	
" 3	6	

				1919	1920
School Hygiene					42
Sociology					
"	1	.....		23	27
"	2	.....		8	
"	3	.....		18	17
Stenography					
"	a	.....		14	11
"	b	.....		2	5
Textiles and Clothing					
"	"	"	a	.....	13
"	"	"	1	5	
"	"	"	2a	4	
"	"	"	3	15	14
"	"	"	6	10	11
"	"	"	4	.....	13
Typewriting				19	30
Zoology				11	17

The Summer Quarter has shown a very satisfactory growth both in the number of students and in the quality of instruction. The excellent faculty assigned to this department during the biennium has given such a stability and tone to the instruction that placed it on a par with the work of the other quarters of the year.

The lectures and other forms of entertainment that were made available to the student body were very much appreciated as shown by the attendance on these occasions.

I would recommend that during the next biennium the policy of retaining a strong faculty for the Summer Quarter be maintained, and that we secure the services of at least one lecturer of national reputation who will emphasize some of the problems which the institution is trying to solve.

Respectfully submitted,

JAMES H. LINFORD.

Director of Summer School.

EXPERIMENT STATION

To the President of the College:

Sir: I have the honor to submit herewith a report of the Agricultural Experiment Station for the last biennium.

Well Trained Staff.

Never has there been a time in the history of the Experiment Station when it has had so large a staff of well trained men. During the years since the establishment of the Station many eminent scientists have been connected with the organization, but never before have so many capable workers been on the staff at the same time. No other agricultural experiment station in the United States has a staff with so large a proportion of its members holding the doctor's degree. The degree, of course, is not all that is necessary in an investigator, but it indicates scholarship and a preparation for the work.

In on other branch of the work of the Agricultural College is specialization and extensive training so important as in research. In teaching and extension, scholarship is important, but when an attempt is made to extend the borders of knowledge by original investigation, it is absolutely necessary to have men who are capable of going to the bottom of a problem and who have the training which will enable them to carry their work further than it has been carried by others.

Changes in Personnel.

The following members of the Station Staff have resigned during the biennium: H. W. Stucki, Reuben Hansen, H. C. Goldthorpe, Carrie Thomas, H. R. Hagan, W. W. Henderson and I. J. Jensen.

The appointments made to the staff were: R. L. Hill, Ph. D., Cornell University and formerly of the Maryland Agricultural Experiment Station, in charge of Department of Human Nutrition; Blanche Cooper, B. S., Utah Agricultural College, Associate in Human Nutrition; E. B. Brossard, Ph. D., University of Minnesota, Farm Management; Arthur Fife, B. S., Utah Agricultural College, Assistant in Irrigation; George E. King, B. S., Utah Agricultural College, Assistant Entomologist; M. D. Thomas, B. Sc., Oxford University, Associate Agronomist; A. L. Wilson, B. S., Utah Agricultural College, Superintendent Davis County Farm; Peter Nelson, B. S., Utah Agricultural College, Farm Super-

intendent; J. R. Bateman, B. S., Utah Agricultural College, Superintendent Panguitch Farm; H. J. Pack, B. S., Utah Agricultural College, Assistant Entomologist.

C. T. Hirst, M. S., who was given a year's leave of absence for study at the University of California, has returned as Associate Chemist, and B. L. Richards, Ph. D., University of Wisconsin, who was also on leave of absence for study, has returned as Associate Botanist.

Co-operation Among Departments.

One of the most pleasing features in connection with the work of the Experiment Station is the spirit of hearty co-operation that exists among the various members of the staff. In many institutions considerable rivalry and jealousy exist between departments. This prevents the mutual discussion of common problems. No one person or department can hope to possess all knowledge, nor can it be sufficiently versatile to see all sides of a problem. This means that conference between men with different training and different points of view will make possible a much more prompt and complete solution than would be possible by a single individual or department.

In order to promote the discussion of problems and to secure inter-departmental suggestions, the staff meets as two seminars, one dealing with questions relating to soil and plants and the other with animal problems. In addition to these somewhat formal gatherings, numerous informal discussions are held between the various departments, and in a number of cases projects are conducted co-operatively by two departments.

Not only are the professional feelings among the staff members cordial, but a strong personal feeling of good will is felt by the various members for each other. All work together like a big family where everyone is doing just the things he likes best to do; for I think without exception the men are all deeply interested in their work. Most of them know no hours as far as work is concerned. They give their full time and all their energies to their investigations.

Departments.

The work of the Experiment Station is administered under the following departments: (1) Agronomy, (2) Field Crops, (3) Arid Farms, (4) Irrigation and Drainage, (5) Animal Husbandry, (6) Horticulture, (7) Chemistry and Bacteriology, (8) Physics, (9) Plant Pathology, (10) En-

tomology, (11) Poultry, (12) Geology, (13) Panguitch Farm, (14) Davis County Farm, (15) Farm Management, (16) Range Management, (17) Human Nutrition, and (18) Soil Surveys.

During the biennium the last five named departments were created and the division of work in some of the other departments was slightly rearranged.

Noteworthy among these departments is that of Human Nutrition which is something of an innovation as far as agricultural experiment stations are concerned. It was thought, however, that the proper nutrition of the farmer's family was as important as the feeding of his stock, and that since farm products were primarily the commodity concerned, full justification could be had for establishing this department.

As soon as funds are available, it seems desirable to establish additional departments, particularly one to study farm equipment and machinery.

Projects Under Investigation.

Research can best be carried on when undertaken in an organized form with a statement of the exact extent and nature of the investigation which is to be conducted. In order to make this possible the work is organized by projects, which are simply individual definite problems.

The following projects are under investigation:

1. Nephi Dry-Farm Substation.
2. Other Dry-Farm Stations.
3. Irrigation of Beets, Potatoes, Oats and Alfalfa.
4. Vegetation House.
5. Moisture, Soil and Crop Relations.
6. Sugar-Beet Breeding.
7. Commercial Beet Seed Production.
8. Potato Breeding.
9. Rotations and Fertility Tests.
10. Miscellaneous Field Studies.
11. Action of Alkali.
12. Soil Moisture Studies.
13. Sevier Farm.
14. Cedar City Farm.
15. Pumping for Irrigation and Canal Improvement.
16. Amount of Water to Apply.
17. Soil Moisture Constants.
18. Irrigation Institutions.
19. Dairy Rations.
20. Hog Rations.

21. Steer Feeding.
22. Factors Influencing Bacterial Activities of the Soil.
23. Permanent Fertility Studies.
24. Survey of Composition of Irrigation Waters.
25. Ground Water Development.
26. Frost Studies.
27. Alfalfa Weevil.
28. Alfalfa Seed Insects.
29. Wheat Straw Worm.
30. Apple Leaf Roller.
31. Potato Diseases.
32. Peach Diseases.
33. Canning Crop Diseases.
34. Plant Disease Survey.
35. Pasture Survey.
36. Poultry Breeding.
37. Incubation Studies.
38. Canning Crops.
39. Utilization of Horticultural Products.
40. Horticultural Survey.
41. Breeding of Horticultural Plants.
42. Grain Varieties.
43. Grasshoppers.
44. Rodent Pests.
45. Bombyliidae.
46. Introduction of Chinese Mantid.
47. Lighting Poultry Houses.
48. Range Survey.
49. Soil Survey.
50. Honey Bees.
51. Miscellaneous Insects.
52. Human Nutrition.
53. Beet Pulp and Molasses Poisoning.
54. Farm Organization.
55. Types of Farming.
56. Miscellaneous Farm Management Studies.
57. Poultry Feeding.

Publications.

The only method the Station has of getting its findings out to the world is through its publications. It therefore finds itself very much in the publishing business. The bulletins and circulars in the following list were published by the Station at its own expense. The size of the edition and the number of pages in each publication make it possible to calculate the total pages issued.

No.	Title	Authors	No. in Edition	Total Pages	Pages
Bulletins:					
166	The Climate of Utah.....	F. L. West and N. E. Edlefsen	11,000	66	726,000
167	The Irrigation of Oats.....	F. S. Harris and D. W. Pittman	11,000	20	220,000
168	Relative Resistance of Various Crops to Alkali	F. S. Harris and D. W. Pittman	9,000	23	207,000
169	The Use of Alkali Water for Irriga- tion	F. S. Harris and N. I. Butt	9,000	41	368,000
170	A Study of Methods of Determining Soil Alkali	D. W. Pittman	6,000	21	126,000
171	Alfalfa Seed Growing and the Weather	J. Cecil Alter.....	10,000	31	310,000
172	The Value of Barnyard Manure on Utah Soils	F. S. Harris	11,000	21	231,000
173	The Duty of Water in Cache Val- ley, Utah	F. S. Harris	12,000	16	192,000
174	A Variety Survey and Descriptive Key of Small Grains in Utah.....	George Stewart	12,000	35	420,000
Circulars:					
36	Practical Information on the Mea- surement of Irrigation Water.....	O. W. Israelsen.....	12,000	29	248,000
37	Field Beans	George Stewart	12,000	45	540,000
38	Legislation Concerning Water Rights..	O. W. Israelsen	5,000	26	130,000
39	A Day at the Utah Agricultural Ex- periment Station	M. C. Merrill, O. W. Israelsen and Byron Alder	25,000	58	1,450,000
40	Potato Production	George Stewart	12,000	54	648,000
41	Soil Alkali	F. S. Harris.....	12,000	7	84,000
42	How to Cull a Flock of Hens.....	Byron Alder	15,000	8	120,000
	Total pages				6,020,000

In addition to the publications given above many of the findings of the Station have been printed in technical journals, books and other places. The more important of these are listed below. In addition to these the staff members have contributed hundreds of popular articles to farm journals, news papers and other periodicals.

1. The Sugar Beet in America—F. S. Harris, The Macmillan Company, 342 pp.
2. Soil Alkali—Its Origin, Nature and Treatment—F. S. Harris. John Wiley and Sons, Inc., 258 pp.
3. Capillary Moisture—Holding Capacity—W. H. Gardner. Soil Science, Vol. VII, No. 4, April, 1919.
4. A Capillary Transmission Constant and Methods of Determining it Experimentally—Willard Gardner. Soil Science, Vol. X, No. 2, August, 1920.
5. The Movement of Moisture in Soil by Capillarity—Willard Gardner. Soil Science, Vol. VII, No. 4, April, 1919.
6. A New Soil Elutriator—Willard Gardner. Soil Science, Vol. IX, No. 3, March, 1920.
7. The Antagonistic Action of Calcium and Iron Salts Toward Other Salts as Measured by Ammonification and Nitrification—J. E. Greaves. Soil Science, Vol. X, No. 2, August, 1920.
8. Azofication—J. E. Greaves. Soil Science, Vol. VI, No. 3, September, 1918.
9. The Action of Some Common Soil Amendments—J. E. Greaves and E. G. Carter. Soil Science, Vol. VII, No. 2, February, 1919.
10. Composition of the Waters of the Intermountain Region—J. E. Greaves and C. T. Hirst. Journal of Industrial and Engineering Chemistry, Vol. X, No. 12, p. 100, December, 1918.
11. The Phosphorous, Potassium and Nitrogen Content of the Waters of the Intermountain Region—J. E. Greaves and C. T. Hirst. Journal of Industrial and Engineering Chemistry, Vol. XI, No. 5, page 451, May, 1919.
12. Influence of Salts on the Nitric-Nitrogen Accumulation in the Soil—J. E. Greaves, E. G. Carter and H. C. Goldthorpe. Journal of Agricultural Research, Vol. XVI, No. 4, January 27, 1919.
13. Methods Used in the Study of Soil Alkali—F. S. Harris. Science, N. S., Vol. 52, No. 1339, pp. 198-200, August 27, 1920.
14. The Unreliability of Short-Time Experiments—F. S. Harris and N. I. Butt. Journal of the American

- Society of Agronomy, Vol. XII, No. 5, May, 1920.
15. Some Factors Influencing the Quantitative Determination of Chlorides in Soil—C. H. Hirst and J. E. Greaves. Soil Science, Vol. IX, No. 1, January, 1920.
 16. The Effect of Certain Colloidal Substances on the Growth of Wheat Seedlings—D. S. Jennings. Soil Science, Vol. VII, No. 3, March, 1919.
 17. Asymmetric Dyes—C. W. Porter and C. T. Hirst. Journal of American Chemical Society, Vol. XLI, No. 8, August, 1919.
 18. The Varieties of Small Grains and the Market Classes of Wheat in Utah—George Stewart. Journal of the American Society of Agronomy, Vol. XI, No. 4, April, 1919.
 19. Determination of Normal Temperatures by Means of the Equation of the Seasonal Temperature Variation and a Modified Thermograph Record—F. L. West, N. E. Edlefsen and Scott Ewing. Journal of Agricultural Research, Vol. XIII, No. 10, February 16, 1920.
 20. Preparation of Formaldehyde—M. D. Thomas. Journal of the American Chemical Society, Vol. XLII, No. 5, May, 1920.

Dry-Farm Investigations.

On the experimental dry-farms in different parts of the State work has been continued as during previous years. At Nephi some rather striking results on the use of farm manure have been obtained. The rotation studies have also shown many points of interest. One great problem in dry-farming is the securing of a sufficient diversity of crops. In most sections wheat is raised continuously or alternately with fallow. In order to keep up the fertility of the land and to eliminate the weeds that are associated with grain crops, it is necessary to secure other crops with which wheat may be rotated. From some of the twenty-seven rotations being tested at Nephi we expect results that will be helpful in this regard.

At the Cedar City dry-farm almost continuous drought for several years has made it impossible to secure satisfactory crops, so that the testing of various cultural methods has not been possible. We are testing a number of varieties of different crops in the hope that we shall find something that will be successful for this section.

On the Garfield County dry-farm, crops for short seasons have been studied. Over considerable of the State good land is found at a high altitude with a short season

and it becomes necessary to find crops that will mature in the shortest possible time if these areas are to be utilized. Out of the numerous varieties under test there are a number that seem promising.

On the Kane County Farm fairly good crops have been secured, but much difficulty has been experienced with rabbits and other rodent pests. This area has considerable promise for dry-farming.

For many years dry-farm experiments have been conducted in co-operation with the Office of Cereal Investigations, U. S. Department of Agriculture, Washington, D. C., but in 1920, due to shortage of federal appropriations, it was necessary for the Department to discontinue co-operation. Now the responsibility for carrying on dry-farm experiments rests entirely with the State. This means that the money appropriated for this purpose will need to be increased if all the work is continued.

Irrigation Investigations

Irrigation continues to be one of the most important lines of investigations carried on by the Experiment Station. The greater part of Utah's crops are raised under irrigation. The area that can be cultivated is limited almost entirely by the irrigation water. Very much more land is available than water, so that the increasing of the State's productive area will come about by the better utilization of the present water supply. At the Greenville Experimental Farm, irrigation studies have been made with barley, corn, oats, alfalfa, sugar beets and potatoes. During the biennium several bulletins giving results of these studies have been published. The duty of water as well as methods of irrigating various crops has been under investigation in several other parts of the State.

Soil Moisture Studies.

In connection with the more practical work in irrigation, technical studies have been made co-operatively by the Departments of Physics and Irrigation with the idea of getting every possible fact regarding the movement and distribution of moisture in the soil. Some exceedingly important results have been obtained, and this important problem is being carried much further than in any other station of the country. An attempt is being made to discover the mathematical principles underlying capillarity and water distribution. With a discovery of these principles, the entire problem of soil moisture should be greatly simplified.

Pumping of Ground Water.

The last Legislature appropriated \$20,000 for the special purpose of investigating ground water. Work was carried on in co-operation with the U. S. Department of Agriculture so that much more than the amount appropriated by the Legislature has been spent in this work. The entire State has been examined with the idea of finding ground water that might be available for irrigation. A number of well rigs have been operated during the two years with the idea of testing various types of wells and different types of gravel and sand screens. In some localities many difficulties have been encountered; but on the whole, the work has given excellent results, and much interest has been awakened in ground water development throughout the State. In several areas numerous wells have been dug and hundreds of acres of land have been added to the productive area of the State. A phase of this work which has been given considerable attention is the testing of wells that have been dug under private auspices. In getting proper equipment for a well it is necessary to know the water-producing capacity of the well so that pumps of the right size and machinery of the proper capacity may be installed. It is impossible for each individual who digs a well to make these tests. Facilities for making the tests should be provided by the State or some other public agency. The two years during which ground-water investigations have been conducted have been just long enough to get thoroughly into the problem. Funds should be provided to continue this work. Many areas of the State give great promise, but considerable experimental work will need to be done before they can be developed by farmers.

Weather.

The Department of Physics has continued its study of frost and has extended its investigations to other features of the weather. An interesting formula for predicting the weather at any time of the year has been worked out. This has attracted nation-wide attention. Data regarding climatic features of the State were published in a Station bulletin during the biennium.

Sugar-Beet Breeding.

The breeding of sugar-beets, which has been carried on since 1902, has been brought to a close for the present. As a result of the years of work several desirable strains

were produced which give better results than the European seed. Seed from these strains have been distributed to the various sugar companies which have taken up the commercial production of seed and they are rapidly becoming independent of the European supply. The value of the work on sugar-beet breeding was brought out during the war when the German and Russian supplies of seed were cut off. It seems evident at present that the American sugar companies will now be able to produce their own seed, insofar as they desire to do so.

Potato Breeding.

Hill selection of potatoes has been continued with excellent results. Potatoes show a remarkable bud variation which makes possible rapid development. The strains developed at the Station are superior in quality and yield. In addition to producing a good type of potato much valuable material on methods of breeding has been accumulated.

Soil Fertility.

Early investigators considered that the lands of Utah were so fertile that there productivity would be maintained for generations without the addition of fertilizers, but the investigations we have carried on show that the addition of manure is exceedingly important even on some of the most fertile of our soils. It was found that where properly applied a ton of manure gave an increased yield of one ton of beets. If a ton of beets is worth \$12, a ton of manure will increase the value of the crop of beets by \$12. These results show that manure is much more valuable than it had previously been thought to be. It seems evident that the time has now come when complete fertility investigations should be made to see just what elements in the soil can be supplied to best advantage.

Alkali.

Millions of acres of land in Utah contain soluble salts in quantities that interfere with the growth of crops. In order to reclaim these land it becomes necessary to secure as much information as possible regarding the nature of alkali and its toxic limits. For this reason considerable attention has been given to alkali by two or three departments of the Station. Important findings have been made and the world's knowledge of alkali has been considerably enlarged by the Station's work on this subject.

Sevier County Farm.

The farm in Sevier Valley, on which irrigation investigations have been in progress for several years, has given additional valuable information during the last biennium. The Sevier River is one of the important sources of irrigation water in the State. Considerable agitation exists at present regarding the rights of water users on various parts of the stream. Before these rights can be settled properly it is necessary to have experimental information regarding the duty of water. We already have considerable information that will be useful when the question arises.

Reorganization of Canal Systems.

In the early days when pioneers led water over the parched land no capital was available to develop the larger irrigation projects. Only the water that could be most easily diverted was used. The tracts lying along the stream beds were the first to be put under the ditch; the higher tracts that required more expensive construction had to be left until a later date. As remarkable as was the work of the pioneers, their type of organization did not always remain adequate for the larger systems. It has become necessary to organize on a more modern basis, many canal systems. In the reorganization of these systems the Station has been able to render much assistance. Better measuring devices and improvement in canals have made possible a more equitable distribution of the water.

Stock Feeding.

The ranges of Utah need to be supplemented by feed in order to finish stock for the market. Utah has several important feeding centers and stock feeding is an important industry in the State. Much waste is likely to result unless there is a proper understanding of the qualities of the various feeds and the needs of different kinds of stock. The balance between hay and grain, the possibility of the use of by-products from manufacturing, such as beet-pulp and molasses, and numerous other problems call for solution. These are being gradually investigated by the Station. A study has also been made of the value of silage in the dairy ration.

Range Studies.

The greater part of the surface of Utah is unsuited to

the production of ordinary farm crops because of its rough topography or because of its lack of water. As a result, over 90 per cent of the State is a grazing ground. In some sections very little forage is produced and the vegetation is suited only for winter range for a limited number of sheep. In other places an excellent range is found. The principles underlying the scientific management of the range in order to secure the best returns from it are not well understood. Definite experiments need to be made to determine the methods of handling this vast area. The Range Management Department is making a survey of the State to determine the types of grazing to which each section is adapted. Studies are also being made in the re-vegetation of ranges that have been over-grazed. In order to conduct these experiments in the most effective way the Station should have a large tract of range for permanent study. If the Federal Government or the State would set aside several thousand acres for this purpose, and funds could be made available for fencing and other necessary equipment, the value of this work would be greatly enhanced. I hope that before many years elapse the State will see its way clear to appropriate money for this purpose.

Chemical and Bacteriological Investigations.

All the important things of the world are not necessarily large in size. Some of the most minute organisms have the greatest effect. The fertility of the soil is dependent on the activity of bacteria, so in maintaining fertility it is necessary to have conditions favorable to the growth of beneficial organisms. The bacterial work of the Experiment Station consists almost entirely of soil investigations, particularly the relations of alkali salts to bacterial activities. A number of publications on the subject, which have attracted wide attention, have been issued during the last biennium and much valuable work is in progress. The Department has also concerned itself with the composition of irrigation waters. It has published material that shows the alkali content of most of the important irrigation streams. In doing this work it was found necessary to develop new methods that would reduce the time in making the analyses. For this reason much attention has been given to a study of volumetric methods of determining the sulfates, as well as to improving methods of determining nitrates and chlorides. The concentrations at which the common alkalies become poisonous to the microscopic plants have been found. Large quantities of salts are poisonous but small quantities stimulate bacteria so that they render

more plant food available to the higher plants. A definite factor which gives the quantity of water that should be in any soil for maximum bacterial activity has been determined. This factor seems to be closely correlated with the water requirements of the crop plants.

Insect Pests.

Crops are in constant danger of being destroyed by the ravages of insect pests, which may in a single season do millions of dollars worth of damage. The Department of Entomology is frequently called on to examine outbreaks of various pests and to give advice as to remedies. Among the insects that have been given special attention are the alfalfa weevil, alfalfa seed insects, wheat straw worm, apple leaf roller, grasshoppers, and sugar-beet insects. The Department has also introduced beneficial insects which help in controlling injurious species. Studies have been made of the various rodent pests in the State and methods of eradicating them investigated. Some work has also been done with honey bees.

Plant Diseases.

Years ago Utah was thought to be almost immune to plant diseases because of its dry climate, but with the lapse of time, diseases have been gradually introduced and it has been found that we are now by no means free.

The diseases of potatoes have been made the subject of special consideration since the entire potato industry was threatened. Rhizoctonia, Fusarium Wilt and Blackleg gave most trouble. All of these diseases have been investigated in considerable detail and methods of preventing their ravages developed.

Sugar-beets have, during the last two or three years, been attacked by two or three serious diseases. *Phoma betae* and *Cercospora* have done great injury in places, but the Department of Plant Pathology is determining methods of control. During the last year a new undescribed disease was discovered among the beets of the State. This is being studied.

Pea diseases, which have done considerable damage in districts where peas are raised for canning, are being studied to find a means of control. A general record is being kept of diseases of all canning crops, as these crops are each year gaining greater prominence in the State and some of them are affected by serious troubles. The California peach blight has during some years caused much damage. The methods

of handling this disease have been worked out by the Station.

Poultry Investigations.

The activity of the Poultry Department have been directed along the lines of breeding, incubation, feeding and housing. Each of these is attended by numerous problems. In the breeding work some very excellent strains of white leghorns have been developed. Various types of poultry houses have been studied and the Department has now developed a house which is considered to be very superior for Utah conditions. The lighting of poultry houses during the long winter nights has been found profitable under certain conditions. With the short days the hen does not seem to get sufficient feed so that she can be a profitable worker, but if the feeding period is extended through artificial lighting, the winter when eggs are high in price can be made an important egg-producing season.

Tomato Breeding.

The canning of tomatoes has become a very important industry in Utah during recent years. For canning, a particular type of tomatoes having a firm flesh is desired. The Department of Horticulture is trying to produce this desired type and also get a variety that will begin bearing early and produce a large yield. In carrying on this work the Department has now about ninety strains of tomatoes under investigation. These are being studied with a view of securing a superior type.

Canning Crops.

In addition to tomatoes many other crops are being raised in Utah for canning. Chief among these is peas. The Department of Horticulture is making a general study of various kinds of canning crops as well as cultural methods of the Departments of Plant Pathology and Entomology are investigating diseases and pests. Much of this work is being localized at the new Davis County Farm, although the greater part of the laboratory work is conducted in Logan.

Horticultural By-Products.

In the raising of fruit much that is produced is not suitable for fancy trade and cannot be sold as fresh fruit. If the farmer is to get adequate returns he must do it in

ways other than the usual marketing channels. Since these horticultural by-products are so important the Department of Horticulture is devising ways of utilizing them. One way, which has attracted wide attention, is the making of candied fruit. An excellent article is being prepared and is being sold on the market with marked success.

Ornamental Trees and Shrubs.

One phase of agriculture that has been neglected in Utah is the ornamentation of homes by plantings of trees and shrubs. The irrigation water that is available makes possible the raising of a great variety of plants. As a result, beautiful surroundings might be had for almost every home, but one finds comparatively few kinds of ornamentals. Relatively few species of shade trees and shrubs are seen, even though a great variety is available. With a view of fostering more diverse plantings and also in order to discover what varieties are best suited to Utah's climatic conditions, the Station is studying 150 varieties of ornamental shrubs and 100 varieties of shade trees. These are planted at Logan and on the Davis County Farm so that their growth under different conditions may be obtained.

Grain Varieties.

Practically all the dry-farm area and part of the irrigated land in Utah is planted to small grains, so that the grain crops are among the most important in the State. In order to discover just what is being planted and also to find what are the best varieties, a survey has been conducted in all parts of the State. It has been found that the same variety is raised under numerous names in different localities and the same name is applied to several distinct varieties, so that a great confusion is found. An attempt has been made to classify these types and to find which give best results. During the survey an unnamed macaroni wheat was found in Sevier County which has proved itself to be very superior to most strains. It has been designated as "Sevier." Considerable hybridization has been carried on both at Nephi and at Logan. Out of this work we may expect the development of some very good varieties.

Soil Survey.

For a foundation to successful soil management it is necessary to have a survey of soils. During the biennium the Department of Soil Surveys was organized and a beginning has been made in surveying the soils of the State. The work is being done in co-operation with the United

States Bureau of Soils. In 1919 a survey was made of the soils of West Millard County, an area of about 150,000 acres. During 1920 a survey was made of the soils of Uintah County. This included about 90,000 acres. The type of soil, the crops produced, the alkali contained and several other interesting items are being obtained in the survey. It is hoped that sufficient funds will be available to conduct this survey with vigor until all the soils of the State are covered.

Human Nutrition.

The new Department of Human Nutrition has taken up the study of the feeding of infants. The death rate during the first two years of a child's life is many times greater than later. This is due largely to improper feeding. In the work it has been found that the milk of certain cows, on account of hardness of curd, is not suited to the feeding of babies. This milk is being studied to find its chemical nature so that physicians will be able to examine milk and determine whether or not it is adapted to infant feeding.

Many observations of the under-nourished child have been made in Salt Lake City and other places and much valuable material accumulated in this way.

Farm Management Studies.

The new Department of Farm Management has begun the investigation of types of farming that are best adapted to Utah conditions under irrigation and dry-farming, also problems in connection with farm organizations. The surveys that have been made indicate that profits in agriculture are largely a question of capital and organization. Most farmers work hard, but they do not all succeed equally well because the methods of conducting their business are often faulty. The marketing of crops, the best use of labor, machinery and power, the best ways of farming, and numerous other questions are under investigation by the Department of Farm Management.

Panguitch Farm.

The farm at Panguitch, which was formerly an Indian school, was left by the Federal Government to the State, which turned it over to the Experiment Station. This farm is being operated as a breeding farm for high-grade Short-horns, so that bulls of an excellent quality can be furnished to the cattle raisers of Southern Utah at a reasonable price.

During past years cattle salesmen have at various times taken into Southern Utah an inferior lot of breeding animals, and since the range men did not have access to better stock they were forced to purchase these inferior pure-breds to meet the law requiring pure-bred sires on all public ranges. It is hoped that we shall be able to make this a source of better cattle so that the entire southern part of the State will be benefited. Already we have an excellent herd of breeding cows.

Davis County Farm.

In the last Legislature funds were appropriated for the purchase of an experimental farm to be devoted to the study of canning crops, but on account of shortage of funds the Governor saw fit to eliminate this item. The need for experimentation on the subject was so great that farmers of Davis County induced the County Commissioners to appropriate funds for the rent of such a farm so that the Station could take up the work. Accordingly, a canning crops farm was established in Davis County in co-operation with the County. In order that this farm may reach its maximum of usefulness and that long-time experiments can be established without fear of interruption, this farm should be purchased by the State and funds appropriated to provide adequate buildings and equipment to conduct the farm property. The single season's work that has been carried on indicates that the expenditures for this work will be fully justified.

General Needs.

The expense of labor and of equipment has increased so greatly during the last few years that the Station has found itself embarrassed in carrying on its work. Much of the work has had to be curtailed on account of lack of funds and it has in many cases been necessary for high-priced department heads to carry on routine work that could have been done just as well by cheaper assistants. In the interest of general economy, therefore, it is necessary to have the funds of the Station very materially increased over those of the last biennium. The best interests of the State demand a large amount of experimental work in agriculture. This is expensive, but for every dollar expended the return of many dollars to the State Treasury may be expected.

Respectfully submitted,

F. S. HARRIS,
Director.

EXTENSION DIVISION

To the President of the College:

The biennium just closing has been attended by many uncertainties, financial disappointments, and adverse health conditions. The health situation has resulted in the abandonment of the big annual Round-Ups of both years. The withdrawal of about \$54,000 war emergency funds, at the close of the war, with only a minor replacement, has necessitated a decided reduction in the number of our Extension force. The insistent demand by the counties for the continuation of the County Extension work has impelled us to reduce, first the number of specialists and supervisors, and then to a lesser degree the number of county workers.

In the face of this reduction in federal war funds we have had to meet the rather unusual increases in salaries required to successfully hold our workers. The counties have met the Extension Division in a very pleasing way in providing additional funds to meet these bare necessities.

PERSONNEL

At the beginning of the biennium there were at work twenty-five county agricultural agents, covering all counties of the State, twelve county home demonstration agents in as many counties, thirty-four part-time county club agents in eighteen counties, nine full-time specialists, one part-time specialist, ten supervisors, and four clerks.

During the biennium there have been many changes in the personnel of the Extension Division staff. There have been three directors: Professor William Peterson, Acting Director, from December 1, 1918, to June 30, 1919; Professor John T. Caine III, July 1, 1919, to June 30, 1920; and R. J. Evans, July 1, 1920, to the close of the biennium. Director Caine was on leave of absence on Federal War Extension work during the first seven months of the biennium.

The transfer of R. J. Evans to the office of Extension Director, left a vacancy in the position of County Agent Leader. This position was filled by William W. Owens, who had been acting as Assistant County Agent Leader.

Lorin A. Merrill, Assistant County Agent Leader, died January 26, 1919, after serving in that position since July 1, 1916,

Lowry Nelson, Assistant County Agent Leader, was transferred to the position of County Agent, March 20, 1919.

The change was necessary owing to ill health of Mr. Nelson.

Miss Gertrude McCheyne resigned as Home Demonstration Leader, July 30, 1919, and was succeeded by Mrs. Rena B. Maycock, July 1, 1919.

Hortense White resigned as Assistant Home Demonstration Leader, June 30, 1919. This position remained vacant until July 1, 1920, when Miss Amy J. Leigh was appointed to fill the vacancy.

Professor J. C. Hogenson resigned as State Leader of Boys' and Girls' Club Work, June 30, 1919, and was appointed Specialist in Charge of Institutes and Schools, and Correspondence Study Work in Agriculture. Dr. M. H. Harris was appointed to fill this vacancy July 1, 1919.

Henry Oberhansly resigned as Assistant State Club Leader, June 30, 1920.

Miss Bessie Eaton resigned as Assistant State Club Leader, February 28, 1919.

Miss Goldie Faux resigned as Assistant State Club Leader, June 30, 1920.

At the close of the biennium there were no assistant state leaders in this branch of the service.

J. W. Watson resigned as Farm Help Specialist and was succeeded by E. J. Kirkman, September 20, 1918.

Dr. W. H. Willis resigned as Veterinary Specialist in the spring of 1919, and the position left vacant.

Miss Rozina Skidmore, Clothing Specialist, was changed from half to full time, November 1, 1919.

Miss Blanche Cooper was appointed Specialist in Child Welfare, on half time, April 1, 1920.

Miss Charlotte E. Dancy was appointed Specialist in Home Nursing, September 1, 1920.

The following positions were discontinued June 30, 1919, owing to withdrawal of war funds:

Dry-Farm Specialist.

War Emergency Poultry Specialist.

War Emergency Hog Specialist.

War Emergency Farm Help Specialist.

War Emergency Veterinary Specialist.

Irrigation Specialist.

The Poultry, Hog, Farm Help and Veterinary work was all financed by Bureaus of the United States Department of Agriculture.

The following changes were made in the personnel of county agents:

On January 4, H. J. Webb, County Agent in Salt Lake County, resigned to take up farming, and was succeeded on

March 20, 1919, by V. L. Martineau, formerly county agent in New Mexico.

On January 6, T. W. Bennion, County Agent in San Pete County, resigned to study medicine, and Lowry Nelson succeeded, March 20, 1919.

Summit and Morgan Counties, which had been serviced by one agent, requested separate agents, and on April 1, 1919, Alma Wilson, formerly Specialist in Plant Pathology, was appointed to take charge of the work in Morgan County.

A. D. Egbert resigned the position of County Agent for Garfield and Piute Counties on April 1, 1919, and C. M. Aldous succeeded as Agent for Piute County, June 4, 1919. Piute had petitioned for a separate agent and Garfield dropped out. These counties were both emergency counties.

On June 30, 1919, Juab County discontinued county emergency work, due to mutual understanding on account of lack of funds.

Lew Mar Price resigned March 20, 1919, as Agent in Carbon County. The county petitioned for transfer of O. P. Madsen, Agent in Emery County. Emery seemed willing to drop out of emergency work and the transfer was made.

W. A. Stephenson resigned his position as Emergency Demonstration Agent in Rich County, December 1, 1918. This position was left vacant in view of the reduction to follow on July 1.

W. W. Owens, Assistant County Agent Leader, with headquarters at Richfield, was called into the office at Logan on May 1, 1919.

W. W. Owens succeeded R. J. Evans as County Agent Leader, July 1, 1920.

Lowry Nelson resigned as County Agent in San Pete County, December 1, 1919, to become Field Agent for a local sugar factory.

Charles O. Stott was transferred as County Agent from San Juan to San Pete County, April 15, 1920. San Juan is without an agent.

Alma Wilson resigned as County Agent in Morgan County, March 31, 1920, to enter the employ of the Utah Experiment Station as Superintendent of the Davis County Experiment Farm.

DeLore Nichols was appointed County Agent for Morgan County, April 12, 1920.

J. R. Tippetts resigned as County Agent in Washington County, August 31, 1920, to become Principal of the Morgan High School. Washington County is without an agent.

Hugh Hurst resigned as County Agent in Kane County,

September 8, 1920, to join the resident faculty of the Utah Agricultural College. Kane County is without an agent.

Dean F. Peterson resigned as County Agent in Millard County, November 30, 1920, to become an agent of the Utah State Farm Bureau. His special work at present is marketing alfalfa seed.

The following changes were made in the personnel of Home Demonstration Agents:

Resignations effective July 1, 1919:

Gertrude McCheyne, as Home Demonstration Leader, Logan, Utah.

Hortense White, as Assistant in Home Economics, Logan, Utah.

Blanche Cooper, as Specialist in Home Economics.

Alice Holmstead, as Home Demonstration Agent, Sevier County.

Anna C. Ure, as Home Demonstration Agent, Utah County.

Mary L. Lee, as Home Demonstration Agent, Davis County.

Edna Ladwig, as Home Demonstration Agent, Weber County.

Edith R. Lewis, as Home Demonstration Agent, San Pete, County.

Anna F. Otte, as Home Demonstration Agent, Cache County.

Mabel B. Young, as Home Demonstration Agent, Davis County, June 30, 1920.

Leah P. Jennings, Home Demonstration Agent, Salt Lake City, October 31, 1920.

The following appointments were made during the biennium:

Rena B. Maycock, Home Demonstration Leader, July 1, 1919.

Christine B. Clayton, Home Demonstration Agent, Iron County, August 13, 1919.

Blanche Cooper, Nutrition Specialist, April 1, 1920.

Mabel B. Young, Home Demonstration Agent, Davis County, October 13, 1919.

Effie Webb, Home Demonstration Agent, Box Elder County, April 1, 1920,

Amy J. Leigh, Assistant Home Demonstration Leader, July 1, 1920.

Charlotte E. Dancy, Specialist Home Nursing, September 20, 1920.

Claire P. Dorius, Home Demonstration Agent, Salt Lake City, November 1, 1920.

Eva Thomas, Home Demonstration Agent, Salt Lake City, November 1, 1920.

Hettie White, Home Demonstration Agent, Millard County, was transferred to same position in Utah County about September, 1919.

The following changes were made in the personnel of County Club Agents:

Appointments.

Lewis Calder Smith, Salt Lake County, Feb. 18, 1919.

W. H. Evans, Logan City, April 16, 1919.

L. B. Harmon, Provo City, May 16, 1919.

Samuel Morgan, District, Logan, June 1, 1919.

Fayette E. Stephens, Wasatch County, July 18, 1919.

Bessie Morrison, Wasatch County, July 18, 1918.

Jennie Taylor, Uintah County, July 26, 1919.

Eda C. Tippetts, Weber County, September 1, 1919.

A. J. Taylor, Weber County, January 15, 1920.

Forest Slaugh, Uintah County, April 6, 1920.

Chase Kearl, Cache County, April 1, 1920.

Ardath L. Price, Iron County, May 1, 1920.

E. W. Robinson, Weber County, July 15, 1920.

Resignations

All part time club work was discontinued prior to July 1, 1920, and all part time agents left the service before this date. A. I. Tippetts, full time agent, resigned November 15, 1919, and A. J. Taylor, full time leader, resigned June 30, 1920.

Personnel of Extension Division, December 1, 1920:

Administration

Elmer G. Peterson,	President of College,	Logan
R. J. Evans,	Director,	Logan

Specialists

Byron Alder,	Poultry,	Logan
H. J. Frederick,	Veterinarian,	Logan
J. C. Hogenson,	Institutes and Schools	Logan
Ben R. Eldredge,	Farm Management,	Salt Lake
R. J. Becraft,	Range Management,	Logan
Rozina Skidmore,	Domestic Art,	Logan
Blanche Cooper,	Child Welfare,	Logan
O. W. Israelson,	Irrigation and Drainage,	Logan
Charlotte E. Dancy,	Home Nursing,	Logan

County Agricultural Agents

W. W. Owens,	County Agent Leader,	Logan
J. P. Welch,	Utah County,	Provo
R. H. Stewart,	Box Elder County,	Brigham City
H. A. Christiansen,	Beaver County,	Beaver
W. P. Thomas,	Weber County,	Ogden
Alma Esplin,	Iron County,	Cedar City
J. H. Wittwer,	Uintah County,	Vernal
R. L. Wrigley,	Cache County,	Logan
E. R. Price,	Wasatch County,	Heber City
O. P. Madsen,	Carbon County,	Price
A. E. Smith,	Wayne County,	Loa
W. J. Thayne,	Davis County,	Farmington
A. L. Christiansen,	Tooele County,	Tooele
C. O. Stott,	Sanpete County,	Manti
S. R. Boswell,	Summit County,	Coalville
D. F. Peterson,	Millard County,	Delta
G. F. Holmstead,	Sevier County,	Richfield
C. M. Aldous,	Piute County,	Junction
V. L. Martineau,	Salt Lake County,	Salt Lake City
DeLore Nichols,	Morgan County,	Morgan

Home Demonstration Agents

Rena B. Maycock,	State Home Dem. Leader,	Logan
Amy J. Leigh,	Asst. Home Dem. Leader,	Logan
Hettie White,	Utah County,	Provo
Anna Edmunds,	Salt Lake County,	Salt Lake City
Ellen Agren,	Weber County,	Ogden
Rose Homer Widtsoe,	Salt Lake City,	Salt Lake City
Minnie J. Smith,	Wayne County,	Loa
Christine B. Clayton,	Iron County,	Cedar City
Effie Webb,	Box Elder County,	Brigham City
Claire P. Dorius,	Salt Lake City,	Salt Lake City
Eva Thomas,	Salt Lake City,	Salt Lake City

County Club Leaders

M. H. Harris,	State Leader,	Logan
Chase Kearl,	Cache County,	Logan
Forest Slaugh,	Uintah County,	Vernal
Ardath L. Price,	Iron County,	Cedar City
E. W. Robinson,	Weber County,	Ogden

Correspondence Study

J. H. Linford,	Superintendent,	Logan
J. C. Hogensen,	Agriculture,	Logan
Leon D. Hardy,	Economics-History,	Logan

Community Service Bureau

F. R. Arnold,	In Charge,	Logan
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Extension Office

Ida R. Mitchell,	Chief Clerk,	Logan
Vera Carlson,	Stenographer,	Logan
Dorothy Spande,	Stenographer,	Logan

In Co-operation With the U. S. Department of Agriculture

B. B. Richards,	Rodent Control,	Salt Lake City
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SOURCES OF INCOME

Following are sources of income and expenditures during the biennium:

Federal Smith-Lever	\$ 45,179.58
State Smith-Lever	25,179.58
State	67,284.46
County	62,826.67
	<hr/>
	\$200,470.29
U. S. D. A. (regular)	32,991.68
U. S. D. A. (war emergency)	67,531.88
	<hr/>
	\$300,993.85

ORGANIZATION

The primary work of the Extension Division is county extension work. This is divided into three sections: County agricultural agents, home demonstration agents, and junior extension agents. The county agricultural agent has charge of the administrative phase of county extension work under the direction of the Extension Director. Each agent in the county has charge of his or her own subject matter and projects, aided by the corps of spe-

cialists under the immediate direction of the respective state leaders.

The county extension agents are aided in subject matter by the state extension specialists, whose duty it is to aid all three branches of agents' work in planning and carrying out project and other work in the county.

The state leaders have general supervision of the county work. Their principal duties are to assist in organization, in outlining projects, in follow-up work, office methods, reports and similar service.

The county agents all report monthly to their respective state leaders, to the farm bureaus and county commissioners. The reports include a statistical section by days and a narrative section by projects. These are compiled and summarized by the leaders and forwarded to the Extension Director and to the Washington office. They also make an annual report to the same parties. Copies of these are also forwarded direct to Washington and summaries made for the Director.

The state leaders also make monthly and annual reports of their own work to the Director and to the Washington office.

The Extension specialists report to the Director monthly and annually, giving in detail the nature and results of work accomplished and methods used. One copy is retained in the Director's office and another forwarded to the U. S. Department of Agriculture.

The Extension Director makes an annual report of all extension work done for the President of the College and for the U. S. Department of Agriculture. A biennial report is also prepared for the President of the College.

CO-OPERATION

Our co-operation with the Experiment Station and the instructional force at the College has been the very closest. A plan has been in force by which the Extension Division co-operates with six departments at the College in extension work. A definite sum of money is set aside by the Extension Division in each line and the department furnishes help agreeable to the Division. A written project covering each line of work has been formulated and executed in keeping with the general plan. In addition to this work other departments have furnished instructors for special short work, the Extension Division paying travel expenses.

The State Live Stock Board has co-operated to the

fullest extent. During the past biennium so far as this office has any knowledge the State Veterinarian has never failed to meet a single call for help made by our extension agents. The calls have been responded to on very short notice.

The State Crops and Pests Commission has also worked in close co-operation with the Extension force. Frequent conferences have been held between the two organizations in order to work effectively and harmoniously. The county workers have generally worked on a joint program covering crops and pests work.

The very closest of co-operation has been maintained with the U. S. Biological Survey. This includes predatory animal work but more especially along the lines of rodent control. The rodent specialist has really operated as an integral part of our Extension force.

The Federal Farm Loan Associations and Land Banks have worked in harmony with the Extension Division on all affairs of mutual concern. The president, the treasurer, and appraisers of the Land Bank have made a number of calls on this office which have been highly appreciated.

The Bureau of Animal Industry has co-operated extensively with our office. This is especially true with the tubercular testing work, black-leg vaccine supply and dairy extension. It has been a real joint program.

The county farm bureaus and county commissioners have entered into written agreements with the Extension Division setting forth full financial and other co-operation. This agreement has done much to clarify many important phases of extension work and to bring about closer co-operation. The commissioners have responded liberally to the requests of the College and people for financial aid within the counties. The county farm bureaus have become the recognized local extension agency for all county work.

The State Farm Bureau has made the President of the College, the Extension Director and County Agent Leader advisory members of the State Executive Committee. This is resulting in closer co-operation in all state activities.

The State Wool Growers' Association has initiated a movement to work for closer co-operation with the Extension force. One meeting has already been held and it is hoped that results will follow.

The home demonstration work in Salt Lake City is conducted through the Civic Center organization. During the past year the Executive Committee of this organization has agreed to work under the same memorandum of agree-

ment as adopted with the counties. This will mean full financial co-operation by the city. They have already adopted the program of work plan of the Extension Division with excellent results. Project leaders are active in all lines of work conducted.

The home economics workers have also worked in co-operation with the Public Health Association, the State Board of Health, the Relief Society organizations and the Home and School League, the Charity organization and other societies, when aid has been requested.

EQUIPMENT

During the biennium a change in financial policy was made which shifted the local travel and office expense of extension agents from the College to the counties. This made it advisable to sell off the Ford cars owned by the College and used by some of the agents. The Division, therefore, has but two cars left for Extension purposes. Lack of funds has prompted a retrenchment in purchasing some very necessary equipment.

The great supply of free moving picture films furnished by the U. S. Department of Agriculture, the Federal Bureau of Education, by various health associations and of corporations makes it highly advisable for the Extension Division to own a portable moving picture machine.

We are in need of modern equipment for making charts, plats, maps, etc., for use in meetings, demonstrations and reports. There is some old, out-of-date equipment which will be sold and the money reinvested in some of these modern necessities.

CONVENTIONS

While it became necessary to abandon our annual Round-Ups on account of health conditions, it was found advisable to hold the annual convention of extension workers in June of 1919, at which committee reports were discussed and adopted. These dealt with methods of making extension work more effective.

Informal conferences were held with extension agents during the state fair week of 1919.

In January, 1920, the extension agents met jointly with the State Farm Bureau directors and committeemen for two days of its sessions. The staff then met for two days in regular extension meetings, but were compelled to adjourn

due to the fact that a large number of agents contracted influenza.

The extension workers met in Salt Lake for one day's session at the time of the Western States Farm Bureau and Extension Workers' Convention. The county extension agents from all counties were at the state fair in charge of the county extension exhibits. Two meetings were held by the staff at which very important subjects were discussed and reports adopted.

PUBLICATIONS

During the biennium a large number of brief circulars were gotten out dealing with subjects of immediate importance to the people of the state. These include 48 numbers, containing 77,565 copies. The subjects covered deal with agricultural and home economic problems for adults, and boys and girls.

The following circulars were also issued during the biennium:

No. 3, Vol. 7. County Agent and Farm Bureau Work in Utah. R. J. Evans and Lorin A. Merrill, 38 pages, 6,000 copies.

Nos. 9-10, Vol. 7. Correspondence-Study Courses. J. H. Linford, 28 pages, 5,000 copies.

No. 1, Vol. 8. Program Farmers' Round-Up and Housekeepers' Conference, 16 pages, 1,500 copies.

No. 2, Vol. 8. Important Factors in Successful Dry Farming. J. W. Paxman, 60 pages, 3,500 copies.

The Utah Extension News was started August 15, 1920. The little publication is issued monthly by the Extension Division to unify Extension work, to keep Extension agents, Farm Bureau officers, local project leaders and others informed on agricultural and home news. As items of general interest come to our attention from the locals, counties, states, and the country at large, these are published for the information of those who might be interested in them. The mailing list includes 1,200, of which 95 per cent are local leaders either in executive positions or as leaders of organized project work.

FAIRS AND EXHIBITS

County Fairs.

During the months of September and October of each year twenty-six fairs were held. The county extension agents took an active part in promoting and supervising these fairs. The livestock, agricultural, and home economics departments were judged by members of the Extension Division Staff.

Recommendations Regarding County Fairs.

In order to enable representatives from the College to visit as many fairs as possible on one trip, thus saving both time and money, and to enable the College to place an educational exhibit at as many of these fairs as possible, we recommend that each tier of counties hold their fairs at such a time that no two will come at the same time, but one immediately following the other, thus enabling the judges and exhibit to go directly from one fair to another without loss of time.

State Fair.

The Extension Division has had charge of the State Fair exhibits from the College during the biennium. In 1919, the exhibit was planned to show what the College had done and is doing for the homes of Utah. A comprehensive exhibit was made. A model Farm Bureau office was part of the exhibit and Extension Division workers, including a stenographer, were in constant attendance to aid fair visitors. The office seemed to fill a real need.

In 1920 the subject of the exhibit was "What the Extension Division Is Doing for the State." The space around the sides of the building was divided into booths, one for each county's exhibit. Over each booth appeared the following uniform sign:

..... County

Farm Bureau Membership.

..... President.

Men

Women

Boys and Girls

Projects:

.....

.....

.....

The county exhibits were as follows:

Tooele County	Sparrow Control
Utah County	Crop Rotation
	Mill Ends
San Pete County	Grasshopper Control
Piute County	Grasshopper Control
Wayne County	Co-operative Livestock
	Marketing
	Dress Forms
Sevier County	Alfalfa Weevil Control
Wasatch County	Weed Eradication
Morgan County	Potato Disease Control
Salt Lake County	Cow Testing
	(in barn, outside)
	Co-operative Purchasing
	(Women's Dept.)
Box Elder County	Rodent Control
	Millinery
Cache County	Silos
Weber County	Irrigation District
	Hot School Lunch

Summit County	Sunflower Silage
Uintah County	Irrigation Methods
	Boys' Club Garden
Millard County	Drainage
Iron County	Grain Disease Control
	Boys' Corn Clubs
Carbon County	Farmers' Co-operative
	Mill and Warehouse
Davis County	Potato Seed Selection
Beaver County	Co-operative Livestock
	Marketing

Several of the exhibits contained action such as the dress and millinery work of the women, live rodents and sparrows, in rodent and sparrow control exhibits, live pigs in co-operative marketing exhibit, growing crops in rotation exhibit, running water in irrigation district exhibit. Every exhibit contained a worth-while idea. The center of the building contained a profile cut of the main building of the Utah Agricultural College, from the tower of which streamers ran to the uniform sign above each county exhibit. A larger streamer ran from the tower to a picture of the Capitol Building at Washington, hanging high on the wall at one end. The following sign hung on a high side wall:

"The Extension Division is the agent of the Utah Agricultural College and the U. S. Department of Agriculture. It is supported by appropriations from the counties, the State, and the U. S. D. A. It employs 31 field agents and 9 specialists who work in co-operation with the Farm Bureau, which is organized in 256 locals and 23 counties, with 1,296 active committeemen, and a membership of 7,496 men, 1,856 women and 1,492 boys and girls."

Observation Tours and Picnics.

The name Farm Bureau Excursions formerly covered all trips made by the bureau. It is desirable now to designate two classes of trips: Those made by bureau members interested in a certain project such as dairying, drainage, silos, etc., for the purpose of making observations to be used in furthering this project at home, and those trips made for pleasure such as picnics, farm bureau days, and

excursions to places of scenic interest. Of the former 84 were held during the biennium with an attendance of 3,165, and of the latter 14 were held with an attendance of 7,345 members.

INSTITUTES AND SCHOOLS

To the Director of the Extension Division:

Sir: During the first year of the biennium very little institute work was done owing to the prevalence of influenza in all parts of the State at the time the institutes had been planned. Ninety-seven sessions were held in twenty counties of the State with a total attendance of 2,929.

On July 1, 1919, this part of extension work was made a separate department with Professor J. C. Hogenson in charge. Since that time 268 sessions have been held, reaching every county in the State. Total attendance, 15,227.

Total number of sessions held during the biennium, 365, with a total attendance at all sessions of 18,156. Most of the work was done in Uintah, Duchesne, Carbon, Emery, Grand, San Juan, Wayne, Piute, Garfield and Kane Counties.

No Round-Up or Housekeepers' Conferences were held during the biennium, owing to bad health conditions.

Plans for the Future

Two schools will be held each year, one at the Agricultural College and one at the Branch Agricultural College, Cedar City, each of one week duration. At these schools noted authorities on particular phases of farm and home life will be in attendance to give lectures and demonstrations.

At each school one particular problem of special interest to the people in that particular part of the State at that particular time will be emphasized.

It is planned to work almost entirely in co-operation with the Extension Agents and Farm Bureaus in the various counties of the State to provide speakers when desired who will fit into and help to develop the county program of work. Some work will be done in the outlying districts until all of the remote and sparsely settled parts of the State have been visited.

Respectfully submitted,

J. C. HOGENSON,
In Charge, Institutes and Schools.

MARKETING

The specialist's teaching work at the College tied him rather closely during important seasons of the year. In the summer months and at short intervals during the fall and spring rather comprehensive studies were made of several outlying districts, especially in need of marketing aid. Studies were also made of existing market conditions in Salt Lake City and Ogden.

A large number of letters were written in reply to communications from farmers asking for markets information. Meetings were held in most of the counties at which local market problems were discussed and recommendations made. For some months a market report was issued monthly and sent to all county agents and farm bureau presidents. This report covered only products of immediate importance. An exchange list was also included listing livestock, seed, feed, for sale or wanted. This was done to get buyer and seller closer together.

The Markets Specialist resigned in the spring of 1920 just as he was getting a good grasp on our State markets situation and the vacancy has not yet been filled.

The State Farm Bureau has had employed a commercial agent during most of the biennium. The extension agents have co-operated fully with that office through which several hundred thousand dollars worth of hay, grain and other farm supplies have been handled co-operatively.

The county agents have assisted in working out a big state alfalfa seed pool, which will handle the majority of the alfalfa and sweet clover seed crop of the State. This has been with the advice of some of the best banking institutions of the State.

Several of the counties have been assisted by the agents in local and county wool pools handling about a half million pounds of wool.

THE COMMUNITY SERVICE BUREAU

To the Director of the Extension Division:

Sir: The Community Service Bureau the past year has lent seventy-five plays in the State, and written as many letters. The head of the Bureau has also put in a great many hours editing the Utah Extension News for the Extension Division.

In connection with both of these types of work he has made trips to Uintah, Duchesne, Wasatch and Davis Counties, and hopes to make trips to other counties in order to make himself more familiar with the geography, resources and people of the State.

Respectfully submitted,

F. R. ARNOLD,

In Charge.

CORRESPONDENCE-STUDY DEPARTMENT

To the Director of the Extension Division:

Sir: The following is a report of the work of this department during the past biennium:

The department, as now organized, supervises all instruction given through correspondence and also that given by extension classes and the totals given below represent both phases of the work.

Our registration in 1918-1919 was 439 (153 males and 286 females); in 1919-1920 it was 565 (310 males and 255 females). Totals for the two years, 1,004 (463 males and 541 females.)

The work of the department may be classified as follows: (a) Extension classes of college grade conducted by members of the faculty in localities when ten or more persons organize and make application for instruction; (b) extension classes for those who do not seek college credits; (c) credit courses given through correspondence, and (d) non-credit courses through correspondence.

During the biennium instruction was given in the following subjects:

Subjects—	1918-19	1919-20	Totals
Accounting	24	14	38
Art	4	6	10
Agriculture	69	91	160
Bookkeeping		4	4
Civics		2	2
Domestic Arts	9	2	11
English	93	105	198
Extension Methods		25	25
Economics	25	20	45
Entomology	4	12	16
Eugenics	5	2	7
Finance and Banking	12	14	26
Foods	9	1	10
Foods and Clothing	172		172
French	6	7	13
Geology	3	8	11

Subjects—	1918-19	1919-20	Totals
German	4	1	5
History	12	54	66
Household Management		10	10
Home Nursing		3	3
Household Bacteriology		2	2
Latin		1	1
Mathematics	12	20	32
Mechanical Drawing		3	3
Political Science	3	8	11
Public Speaking	4		4
Sociology	40	68	108
Salesmanship		15	15
Stenography	6	10	16
Spanish	2	1	3
Sanitation	5	14	19
School Hygiene		115	115
Typewriting	7	8	15

Our students were registered from the following localities:

Utah by Counties—	1918-19	1919-20
Beaver	2	3
Box Elder	12	34
Cache	42	106
Carbon	4	11
Davis	5	4
Duchesne	2	16
Emery	6	3
Garfield	4	8
Iron	6	9
Juab	5	11
Kane	4	9
Millard	3	14
Morgan	7	9
Rich	4	3
San Juan	3	5
Salt Lake	110	63
San Pete	20	38

Counties and States—	1918-19	1919-20
Sevier	9	12
Tooele	3	5
Weber	14	49
Wasatch	1	5
Washington	2	3
Uintah	4	8
Utah	121	67
Wayne	3	13
Arizona	3	
California	3	1
Colorado		1
Illinois		1
Idaho	27	36
Montana	1	2
Nevada	1	
Oregon		1
Wyoming	5	4
Washington		1
Canada	2	1
Mexico	1	3

Classified as to vocations there were:

Vocations—	1918-19	1919-20
Teachers	130	153
Students	48	82
Farmers	33	59
Housewives	120	91
Accountants	11	19
Salesmen	1	12
Clerks	2	12
Merchants	2	5
Mechanics	1	10
Attorneys	2	3
Nurses	2	4
Stenographers	2	8
Laborers	6	10
Unclassified		95

The number of students completing their courses is very gratifying and the quality of the work done indicates the efficiency of this method of study.

I recommend that as soon as funds are available the faculty of the department be enlarged in order to take care of the many applications that reach us for work in Home Economics, Agricultural Engineering, and the sciences that we are now unable to give.

Experience leads us to the conclusion that this department is of great service to those who are unable to continue their education in residence.

Respectfully submitted,

JAMES H. LINFORD,

Superintendent.

FARM MANAGEMENT

To the Director of the Extension Division:

Sir: The Department of Farm Management has been without a specialist most of the time during the biennium, hence very little work has been done. L. A. Richardson resigned March 1, 1919, and no one was appointed to succeed him, owing to the lack of funds, until July 1, 1920, when Ben R. Eldredge was appointed to fill the vacancy.

During the time Mr. Richardson was working he distributed 344 farm record books among the farmers in twenty-two counties of the State and conducted some cost of production work in five counties.

The report of Mr. Eldredge follows:

After taking up my work in Farm Management on July 1, I found it necessary to still give considerable attention to matters that I had under way as agent in dairying. This was especially the case in regard to silos and silage crops. In Wasatch County the first five silos to be constructed were built this year and filled with sunflower silage, Wasatch County being a stock raising section with an altitude that renders corn growing extremely hazardous.

Similar conditions exist in Summit County, where the first two silos were built and also filled with sunflower silage.

In some parts of Cache Valley considerable acreages of sunflowers were harvested and placed in the silo, while test crops were grown in Weber, Salt Lake, Utah and Sevier Counties, all of which have silos filled exclusively from the sunflower crop, while trial plats of sunflowers have grown in most of the other counties of the State. I do not at the present time expect the Russian sunflower to supplant the corn crop for silage, but I do believe it will have an important place in Utah agriculture in those valleys where the climatic conditions are unfavorable to the maturing of corn.

County agent in Sevier County reports measuring a piece of average stand of sunflowers in one field and weighing the crop from that measured piece, which showed a yield of 51 tons per acre. We are finding, however, that the sunflowers at the stage when they are put in the silo carry a higher moisture content than corn does when it is at its best stage for the silo, and it will be part of our plan to determine to some extent during the coming biennium the amount of excess moisture that the sunflowers contain.

There are also some factors that enter into the harvesting and handling of the sunflower crop that should have further attention.

One other piece of work that has received considerable attention that was carried over from the program I had laid out as agent in dairying was the demonstration at the State Fair. This demonstration was made up in Cooperation with the Farm Bureau of Utah, Salt Lake County, and the Salt Lake County Cow Testing Association. Six cows were used from the testing association and the lesson intended to be conveyed was the value of records, and in order to harmonize the demonstration with the main project I have undertaken as Farm Management Demonstrator the cost of milk production. I directed attention to the importance of this project. Several thousand people visited the demonstration and I think it was well worth while.

The project for determining the cost of milk production has not attained the swing and movement that I hope it will gain a little later. We have eight co-operators in Weber County, nine in Utah County, seven in Salt Lake County and eight in Cache County. All of the latter, however, are not yet prepared to make report. Some of those in Weber County were delayed in getting to work, by the beet harvest. This also applies to some of those in Utah County. It has taken considerable work to get this project under way and will necessarily take much more to get it fully moving. We hope to secure co-operators in Wasatch, San Pete and Sevier Counties.

This cost accounting project is going to bring home in a striking manner the importance of maintaining a high individual average among the members of the milking herd, and will prove by actual demonstration what I have been contending for, for many years, that the success of the Utah dairyman is most largely a question of knowing his cows, keeping the best ones and culling the poor ones. Some of our best co-operators are high school boys, and the best report I have received to date was from the son of Andrew Sjoblom of Draper, Salt Lake County, a young man about eighteen.

Since July 1, I have made 170 calls, addressed four meetings with an attendance of 652. This latter does not include the number of people reached with the State Fair demonstration, which perhaps would number something over 2,000, who listened to the oral demonstration. I have no record of letters written but keep copies of all correspondence.

Respectfully submitted,

BEN. R. ELDREDGE,

Farm Management Demonstrator.

RANGE MANAGEMENT

To the Director of the Extension Division:

Sir: Two individual items of Extension work were accomplished during the year:

(1) The Extension Division co-operated with the Experiment Station in paying the expenses of the month's trip through the Southwest, the purpose of which was for studying experiments and demonstration projects in Range Management that are being conducted in Arizona and New Mexico by the United States Forest Service.

(2) The writer answered a call by County Agent DeLore Nichols to determine whether poisonous plants were responsible for loss of horses on range near Morgan.

It is felt that demonstration work is the most valuable as a practical help to livestock men. The writer urgently recommends that through the county agents and the farm bureaus there be chosen some areas of range, suited by location and condition for demonstrating the results that can be secured through proper management of range and of livestock. Details of co-operation could readily be worked out, and scientific work would be done by the writer and other trained help. Undoubtedly Utah's ranges are not producing their maximum of feed, and their improvement could be accomplished in no better way than through demonstrations on representative areas.

Respectfully submitted,

R. J. BECRAFT,
Range Management.

EXTENSION POULTRY WORK

To the Director of the Extension Division:

Sir: The following is a report of the extension work of the Poultry Department for 1919-1920:

There has not been a regularly employed extension worker during this time. The work has therefore been limited and of only two kinds: First, answering the more urgent calls from the county agricultural agents, and home demonstration agents for lectures on housing, feeding, etc., and demonstrations on culling and caponizing. Second: Answering special inquiries that have come to the College through the mail, covering all the various problems of poultry raising. These inquiries have been answered by letter or bulletin, or both, and have averaged about fifteen a week. During the two years approximately 1,500 letters have been written, and at least 2,500 bulletins and circulars on poultry sent out from my office. In answer to inquiries on housing and brooding alone, about 150 blue-prints of the semi-monitor poultry house, 50 of the small shed-roof house, and 40 of the fireless brooder have been mailed out. It is impossible to get any data on how many houses have been built from these blue prints in the State, but in Summit County alone 18 to 20 new houses have been built from these plans.

In my opinion there is urgent need for an extension poultry man in the state who can give his entire time to extension work. On culling demonstrations alone during July, August and September, two or three men could be used to very good advantage and with great profit to the poultry raisers.

Respectfully submitted,

BYRON ALDER,

Poultry Specialist.

IRRIGATION AND DRAINAGE

To the Director of the Extension Division:

Sir: The extension work done by the Irrigation and Drainage Department during the biennium 1919-1920 concerns five general problems, namely: (1) Improvement of irrigation systems and methods of irrigating; (2) increasing the supply of irrigation water; (3) the influence of basis of the water charge on duty of water; (4) utilization of ground water for irrigation, and (5) drainage and water-logged land.

The work on improvement of irrigation systems and methods of irrigation was done in Beaver, Box Elder, Carbon, Duchesne and Uintah Counties.

To facilitate the making of reliable measurements and accurate distribution of waters of North Creek, in Beaver County, it was found that construction of a new canal was necessary. A survey for the new canal was made by C. W. Jonsson reporting to L. M. Winsor and the alignment was selected, but construction has not yet been started.

Brice McBride, reporting to O. W. Israelson, showed that vigorous disagreement between the water users of Price and Wellington was due largely to lack of proper facilities for measurement and distribution of water, and also to the consequent lack of records of use. Detail recommendations were made to the irrigators in a 14-page report, and the county agent now advises that the controversy is practically settled.

In Duchesne County, Leslie Bowen, reporting to O. W. Israelson, found water losses in rocky river channels during July and August sufficient to supply 16,500 acres with one good irrigation, the value of which, according to leading irrigators, was not less than \$33,000.00. In a small distribution ditch less than five miles long, he found a loss of 58 per cent. The work showed beyond doubt, as outlined in a 12-page report to the irrigators of the county, that prevention of these losses, together with similar losses resulting from the use of small streams for culinary purposes, would bring large returns on the investment. The work was done in 1919 and many small distribution ditches were eliminated in 1920.

In Uintah County, Bowen found that in general only 50 per cent of the water diverted from the natural channel reached the farm, and that in one case only 15 per cent was

delivered, there being a conveyance loss of 85 per cent. These losses and other similar ones were brought to the attention of the irrigators, together with recommendations for improvement in a 14-page report which was published by the County Farm Bureau, the canal companies and others.

The report was fully discussed by Professor Israelson at a series of irrigation meetings in Vernal during December, 1919, and April, 1920, after which the irrigators voted an assessment of 25 cents an acre to be used by the Irrigation Department toward a comprehensive investigation of the irrigation conditions and needs of the county. The assessments are being collected by the canal companies. They amount to \$3,000.00 a year for two years. The 1920 work was done by Arthur Fife and assistants, reporting to O. W. Israelson, and it is planned to continue the investigation during 1921.

The problem of increasing the water supply was considered briefly in Box Elder County by Brice McBride, reporting to L. M. Winsor. Mr. McBride examined a proposed source of water supply on which he reported favorably. He advised against a proposed contract between promoters and farmers, and in all probability, thus protected the farmers against excessive losses.

Members of the Irrigation Department on the request of the county agents, advised frequently concerning the creation of irrigation districts in Davis and Weber Counties.

To demonstrate a fact generally recognized by irrigation engineers, namely, that charging irrigators for water on the basis of the quantity used stimulates economy, Vanez Wilson reporting to O. W. Israelson, measured the water used on 17 farms in Box Elder and Salt Lake Counties. Seven of the farmers were supplied water by companies which measure all water delivered and base charges on the amount used, five by companies which measure water delivered, but base charges on a flat rate, and five by companies which make no measurements of quantity, but deliver to each water user a pro-rata part of the available supply. Although the measurements are insufficient in number to warrant a positive conclusion, they suggest that the basing of charges on the quantity of water delivered almost doubled the efficiency of its use.

Advisory work concerning the purchase of equipment for boring and for drilling wells has been done by members of the department at the College by correspondence and by personal visits to various parts of 13 counties, i. e., Beaver, Cache, Davis, Duchesne, Iron, Juab, Millard, San Pete, Sevier, Tooele, Utah, Washington and Weber. The

visits of the department members, together with the growing demand for irrigation water, have resulted in the purchase of six well-drilling rigs by land owners in six different counties at a total cost of more than \$10,000.00, and also the letting of contracts to private well-rig owners for extensive drilling in Cache and Millard Counties.

Extension work concerning the drainage of water-logged lands has been conducted co-operatively with the United States Department of Agriculture. R. A. Hart has rendered assistance to farmers in the organization of drainage districts, and S. G. Margetts has made surveys and designed drainage systems for farmers in Salt Lake, Weber, Cache and Utah Counties. S. G. Margetts resigned early in 1920, and Vanez Wilson has this year given some assistance to farmers in the design of drainage systems.

Needs and Recommendations.

Among many urgent needs in irrigation extension work, four problems demand immediate consideration, namely: (1) Actual field demonstrations of methods of economically increasing the duty of water; (2) assistance to land owners and engineers in methods of development of ground water for irrigation; (3) consultation with canal company officers and county commissioners on the combination of small irrigation companies, and the creation of irrigation districts, and (4) the organization of drainage districts and the drainage of small farms.

Recommendations to the public concerning problems of such vital importance to its welfare must be based on intimate acquaintance with all of the facts involved. The requisite acquaintance with facts can come only with careful study over a number of years. There is urgent need for the employment of a well trained and experienced engineer who may devote his attention largely to one or more of the above problems.

It may be neither feasible nor advisable for the Extension Division during the next biennium to assume the entire expense of the engineer needed. There is, however, urgent need for increasing the present teaching force, both for added technical strength, and to permit the resumption of long-neglected experimental and extension work. An engineer at a salary of not less than \$2,400.00 and an expense allowance of \$1,000.00 should be provided by the Extension Division and the College jointly.

Further co-operation with the United States Department of Agriculture in drainage extension is desirable, but

it is recommended that the agreement provide that a co-operative agent make his headquarters in Logan, with offices at the College.

Respectfully submitted,

O. W. ISRAELSON,

Irrigation Specialist.

DAIRYING

To the Director of the Extension Division:

Sir: The past two years have been trying ones for the dairymen of Utah. The high prices of feeds and the uncertainty of market conditions have eliminated many of the poorer classes of dairy animals, so that cattle of a higher class are found and equipment is better now than ever before. Opportunities have been sought to urge farmers and stockmen to study means of increasing their feed supply in order that the conditions which have prevailed during the biennium just past will not occur again. Dairy associations have been formed in Wasatch, Utah, and Cache Counties to look after general conditions among producers and to purchase pure-bred cattle co-operatively. Bull associations have been formed in Hyrum, Cache County, and Payson, Utah County, where pure-bred sires are used exclusively by the members. Considerable work was done in establishing a cow testing association in Salt Lake County. Most of the herds that are in the association have been visited and a stimulated interest in regard to care and feeding was found.

Wherever private records have been kept and consistently followed up, good results have followed.

Silos.

There are now something over 800 silos in the State, most of them cement concrete, and of these the larger per cent of the monolithic type. Sunflowers have been brought to the attention of the farmers as a silage crop and is being used to a limited extent. There are now over fifteen silos in various parts of the State filled with sunflower silage. The dairy specialist has gone onto the farms and helped to locate the site for the silo, helped to mix the concrete, build the scaffolding and construct the first few courses in a great many instances.

Barns.

A wave of barn building struck the State during the biennium and the spicialist has done considerable work in encouraging, planning and helping to build new barns.

Cattle Purchased.

The dairy specialist has assisted dairymen in purchasing 24 head of pure-bred bulls and dairy cows, and 28 head of high-grade cows.

State Fair.

At the two annual State Fairs the agent in dairying has carried on extensive dairy production exhibits. These exhibits, planned to show the value of good cows, good feed and good care, have been features of the fairs and have resulted in considerable good.

Bull Associations (Assisted to organize)	2
Cow Testing Associations (Assisted to organize)	1
Owners herd records (Blanks furnished and advice)	21
Meeting attended	144
Attendance	11,496
Meetings addressed	128
Attendance	11,504
Barns built (Plans furnished and advice)	6
Barns remodeled (Plans furnished and advice)	1
Silos (Personal assistance)	28
Total Silos built (Indirect aid)	320
Press articles	41
Days with county agents	155
County fairs (As judge)	4
State Fair demonstrations	2
Pure-bred bulls selected	9
Pure-bred cows and calves selected	37
Schools addressed	9
Attendance	1,000
Calls made	702

Respectfully submitted,

BEN R. ELDREDGE,

Dairy Specialist.

COUNTY AGENT WORK

To the Director of the Extension Division:

Sir: I have the honor to submit herewith a report of county agent work in Utah for the past biennium.

The increasing interest of the rural population of the State in the Farm Bureau and their active support of the same has made it possible for the county agents, even though their number has decreased, to accomplish much more work than has been done in any past biennium.

At the present time the county agent force consists of a county agent leader and eighteen county agents covering eighteen counties. The vacancies caused by the resignations of the three assistant leaders and seven county agents have not been filled, due to withdrawal of federal emergency appropriations June 30, 1919. The demand for the work is keen; practically all counties without agents have made requests for their services but present appropriations will not permit their appointment. All agents work in close co-operation with the Farm Bureau.

The Farm Bureau is a membership organization composed almost entirely of farmers. It is, however, not a class organization. It deals in a broadminded way with all rural problems. At present it extends into 270 communities with a membership of 8,776 men and 977 women.

Each community has its own organization with president, vice-president, secretary-treasurer, who, with two additional members, form the executive committee. The executive committee chooses committeemen to direct the work on such activities as the members at the annual meeting select as the problems to receive community attention for the coming year. The work to be done on each subject selected is confined to a few definite features which can be accomplished within the year by each of several members donating a little of his time and energy under the direction of the committee head. When so organized the work is termed a project and the person in charge a local project committeeman. The presidents of all local or community farm bureaus meet as a county board of directors and elect their executive officers. Such projects as have been adopted by a majority of the local bureaus become county projects and are unified and correlated by the county project committeeman. Other problems too broad for community action always present themselves as county proj-

ects. The county farm bureaus have affiliated in a State Farm Bureau, the board of directors of which is composed of all county bureau presidents. The State organization has been able to solve several problems which no county bureau was strong enough to handle. The State Bureau is in turn affiliated with the American Farm Bureau Federation.

Supervision.

The supervision by means of correspondence from the State office, and personal contact with all the county agents at State conventions is supplemented by frequent visits to the counties where sufficient time is taken to study every agent's problems.

The development of efficient office work was the main goal of the supervising staff in 1919. The results were a well equipped office for every county agent, all but two of which are located in court houses or federal buildings; ample stenographic help; adoption of a uniform filing system. The main supervision goal of 1920 has been the demonstration of a method for developing leadership in the local project committeemen of which there were 1,219 in the State. A method tested out in four counties has proved successful and will be adopted throughout the State next year.

Monthly and annual reports submitted by each county agent to the State office help him to systematically follow up his work and keep the office informed as to his activities. During the biennium, the State leaders have made 217 visits to the counties, every county in the state having been visited and have spent eight and one-half days with each agent in his county. Four State meetings have been attended by all agents where uniform methods of work were promoted.

Program of Work

Demonstrations.

The problem of definitely measuring the real value of project work has been no small one. The demonstration plats have done much to supply a reasonably accurate measuring stick for such purposes. These plats are also very valuable in supplying common meeting places to study and discuss the work demonstrated. It becomes the laboratory for Extension courses. Similar demonstrations are very useful in livestock feeding and disease control work.

These demonstration farms are usually located in a section easily accessible to the public. Demonstration farmers are chosen who are personally interested in the problem, who are interested in the public welfare and in whom the farmers have confidence.

During one year, 179 of these demonstrations were conducted, at which 84 demonstration meetings were held with an attendance of 1,751 farmers. The increase profit resulting directly from these demonstrations was \$87,195. The other 1,572 farmers who visited the demonstrations received the laboratory instructions and undoubtedly passed the good word on to many of their neighbors.

In all of these demonstrations definitely measured results are available and recorded. They then form the basis for measuring the accomplishments of the general project work.

Where numerous other farmers adopt the same improved methods but are not looked to as demonstration farmers, the usual method is to allow only one-half the resultant increase secured on the demonstration farms.

Irrigation.

The work of reorganization of irrigation systems has been continued with even greater success this year. This is especially true in getting the water users to distribute their water on the ration system, thus avoiding enormous loss by seepage and evaporation. The water is thus used in fewer ditches at one time. Many thousands of dollars have been saved through these new methods.

There have been organized or reorganized for greater efficiency 40 irrigation systems. These embrace 58,959 acres of land.

The new irrigation law is now being tried out in a number of counties of the State in creating irrigation districts. This work is being carried out so thoroughly in Weber, Davis and Morgan Counties that it bids fair to revolutionize the whole irrigation scheme in the counties. A force of from four to ten men is surveying and platting practically the whole area of agricultural lands in the county. The plan is to determine the water needs of every farm in and county and apportion the new water to be supplied in such proportion reasonable to requirements of every farm on an equitable basis.

One county was so badly pressed with this problem that it became necessary to borrow a whole river from a neighboring county for a day to save certain districts. The Farm Bureau and county agents again took the initiative and it was largely through the co-operation of these two county farm bureaus that the river was released and crops saved.

A total saving of crops resulting from the adoption of more efficient methods of water distribution and from exchange of water during 1919 amounted to \$57,146.

Drainage.

Much work has been done on drainage districts in previous years. In several of the larger districts some obstacles have been encountered by difficulty in getting titles, in labor shortage, and in being compelled to issue new bonds to meet the increased cost of draining. These conditions have been met in most cases by the aid of the county agents and farm bureau committees.

Much of the land previously drained is fast becoming reclaimed and fine crops were produced on many acres. Inspection excursions have been conducted from areas needing drainage to these reclaimed districts to study the systems and their effects upon the soil and upon crop production. These have resulted in many new converts to the cause of draining.

During the biennium 67 new drainage systems have been organized through the efforts of the bureaus and co-operating specialists. These embrace 60,157 acres of water-logged land or land fast becoming water-logged.

Crop Rotation

During the biennium 546 rotation systems have been planned and adopted by as many farmers.

As a part of this system, alfalfa and other legumes

have been plowed under; 766 acres being used for this purpose.

Weed Control

Vigorous campaigns have been conducted in an effort to reduce the enormous losses usually sustained from the presence of noxious weeds. The principal varieties combatted are Canada thistle, bull thistle, burdock, cocklebur, white top and wild morning glory. Many others have been cleaned up along with these. The development of public opinion in favor of weed eradication, and the organization work on the project done by the county agent and bureau, left the Crops and Pests Inspector but few cases where it was necessary to use his police power to have weeds cleaned up. In ten counties demonstrations on spraying weeds were conducted. The spray material consisted of one gallon sodium arsenite in from 50 to 100 gallons of water. It was applied in various ways. Insufficient work has been done to draw conclusions, yet indications are that the spraying method has a place in controlling of rank patches of perennial weeds. Incomplete reports of weeds cleaned up are as follows:

Miles of roads, railroads and canal banks cleaned....	4,421
Acres farm land cleaned	154,023
Farms cleaned (additional to above)	2,500

Grasshoppers

In the counties controlling grasshoppers Sanpete was most heavily infested and developed a very efficient organization for handling the situation. The bran-mash arsenic bait was used except in Cache County, where sawdust was substituted for bran and fruit was omitted from the formula without any noticeable difference in results. In Piute County balloons were used to catch 1,050 bushels of hoppers. The following results were obtained in the state:

Farms on which grasshopper control methods were followed	1,799
Acres involved	43,934
Pounds of poisoned bait used	475,172
Estimated saving effected	\$215,145

Alfalfa Weevil

For two years farmers have successfully controlled the alfalfa weevil by means of a spray developed by George I. Reeves of the Office of Cereal Investigations, United States Department of Agriculture. The spray is made of two to two and one-half pounds of lead arsenate or calcium arsenate per 100 gallons of water, and applied in a fine mist spray with a power sprayer at the rate of 80 to 100 gallons per acre. The increased production of sprayed over unsprayed fields has averaged nearly half a ton per acre. The weevil parasite introduced by representatives of the U. S. D. A. from Italy has undoubtedly lessened the ravages of the weevil. Agents have reported that from 75 per cent to 90 per cent of weevil cocoons examined are parasitized.

Following are results of spraying work:

Farms on which alfalfa weevil control measures	
were followed	502
Acres involved	14,356
Pounds of poison used	26,480
Estimated saving effected from weevil control.....	\$112,328

Sparrows

The farmer is more than ever convinced that the English Sparrow is a real menace to the farm.

Practically all counties participated in this project with the following results: Poisoned grain used, 15,294 pounds; number of farmers co-operating, 11,816; number of sparrows killed, 1,060,797; saving effected, \$244,935.

Rodent Control

All twenty-two counties have extension work in rodent control. The state distributed some free strychnine through the Crops and Pests Inspector; 5,472 ounces additional was purchased at wholesale. Preparation of the bait was supervised by the Crop Pest Inspector or county agent. It was all distributed in labeled bags and signed for on a card similar to the following:

RODENT CONTROL

I, the undersigned, have been instructed in the proper use of poisoned grain for rodents, know the common antidotes for the poison strychnine which is used on this grain, and hereby assume any and all responsibility for accidental or malicious poisoning of live stock, poultry or

persons that may result from the.....quarts
of said poison bait which I have received this.....
day of....., 192....., in a container that is
properly labeled poison, from
and I agree to make a report of results to the county
agent on a form to be supplied by him.

(To be invariably signed by
persons receiving poison.)

Signed.....

Address

In San Juan and Summit Counties the county agents assisted in organizing districts which the Crop Pest Commission and Biological Survey man took over in an effort to completely eradicate rodents in the district. About 46,000 acres were included in San Juan and 30,000 acres in Summit. Eradication was very effective but the method of paying for the work is not entirely satisfactory. In five counties jackrabbits are a menace and have been controlled in part by drives, hunts and poisoning. The poisoning method has proven most satisfactory.

Following is a summary of the rodent control work:

Farms on which rodent control methods were followed	4,211
Acres involved	299,985
Pounds of poisoned bait used	141,050
Number of rodents killed	1,026,717
Estimated saving effected from rodent control.....	\$1,020,471

Seed Supply

In keeping with this project farmers have been given assistance in locating supplies of improved seed direct from the growers. This amounted to a total of 276,470 pounds and saved the farmers \$1,013 on the price of the seed in addition to the increased production from the better seed secured. The Farm Bureaus of Morgan and Wasatch Counties have been growing Early Ohio seed potatoes for the truck growers of Davis County. This is under a regular contract drawn between the co-operating parties.

Pure Bred Live Stock

In the work of herd improvement assistance has been given farmers in securing well bred registered sires. These include 165 bulls, 297 registered cows, 423 registered rams

and 50 registered boars. It has also resulted in the transfer of 89 used sires of merit from one community to another.

Live Stock Diseases

Anthrax has occurred in a number of counties. The disease became very threatening in places due to the exposure of large herds to infected animals. Prompt action here too by the county agents and the State Live Stock Inspector has checked each outbreak. There were 3,528 animals treated for this disease during the year. The county agents have co-operated with the Bureau of Animal Industry and the State Live Stock Board in the state campaign to clean up bovine tuberculosis. The agents have assisted in locating the dairy herds, in arranging for treatment and in many instances assisted the veterinarian in making the test.

During the biennium 54,120 animals were tested for this disease by the state and federal officials in co-operation with the county agents. The results of this project cannot be measured readily in terms of dollars, but from the standpoint of human health the results are beyond all monetary consideration. The number of infested milch cows has been reduced to a relatively small number in the entire areas of the state covered.

Predatory Animals

The work of predatory animal control has been continued with considerable effect. County agents and committeemen have prepared and set out 8,670 poisoned baits. The committeemen have reported 439 dead predatory animals counted. Of these 352 were coyotes and 87 others, largely wildcats. There is ample evidence that many more were killed but were not counted in the reports. The saving effected through the destruction of these 439 animals was reported as \$15,385.

Co-operative Marketing

In selling farm products the degree of standardization has been higher and offerings have been made in larger quantities than was the case before. In buying farm supplies they have been purchased in larger lots and for cash rather than on time as before. The application of the above principles has effected a saving of over \$210,017. With the decline of prices of farm products interest has steadily increased in co-operative buying and selling.

Miscellaneous Work

There is a big field in Utah for the organization of co-operative live stock shipping associations and other co-operative farmers' buying and selling organizations; to demonstrate the feasibility and value of this kind of work, and to assist in expediting the purchase of farm seed, feed and needed supplies and in the sale of live stock and farm crops and products. The Farm Bureaus in all of the counties have functioned, during the biennium, in this co-operative buying and selling work.

In southern Utah the price received for the wool clip has almost always been far below the price received in other districts. During the two years over half a million pounds of wool have been pooled and later sold at a net saving of \$18,111 above the highest local prices.

The Farm Bureaus have been more than ever engaged in community improvements. They have fostered better schools, parks in towns, railroad extension and loading facilities, water systems, sewage disposal systems, telephone extension, electric lights, community scales, public libraries, good roads; in fact, they have functioned largely in all of the public improvements undertaken in all parts of the state during the biennium.

Summary of County Agent and Farm Bureau Work

Total number of farm visits made	21,014
Calls on agent at office relating to the work.....	27,289
Total number meetings held	4,477
Total attendance at all meetings	93,768
Agricultural news articles written by agents.....	4,164
Individual or personal letters mailed.....	58,051
Total copies of circular letters mailed.....	1,437
Bureau excursions and picnics conducted	66
Total attendance at all such parties	10,548

Some of the accomplishments of the county agents and Farm Bureaus which can be expressed in figures follow:

Acres in irrigation systems planned and adopted..	58,949
Acres included in drainage districts formed.....	60,157
Acres cleaned of noxious weeds	154,123
Miles of railroads, roads and canals cleaned of weeds	4,421
Farmers assisted in securing better seed	3,063
Total number of registered animals agent assisted in securing	946
Cows tested for milk production	1,351
Silos erected	292

Actual savings have been recorded from the following work:

Rodent control	\$1,020,471
Sparrow control	244,935
Grasshopper control	501,084
Alfalfa weevil control	112,328
Plant disease control	53,571
Co-operative marketing	210,017
Total savings	<u>\$2,142,406</u>

Respectfully submitted,

WM. W. OWENS,

County Agent Leader.

HOME DEMONSTRATION WORK

To the Director of the Extension Division:

Sir: The Home Demonstration work during the past biennium marks a transition in organization and in project development that is altogether encouraging.

Largely due to the great lessons painfully learned through the recent war experiences, there has come a general awakening to the duties and powers of the people to actively participate in safeguarding the interests of the home, and to face squarely the essential needs of the homes of today with a clear perception of the ability and training necessary to meet these needs. There is marked appreciation concerning the family responsibilities in the great problems of sanitation in the home and in the community; the matter of housing conditions and convenience as vital factors in maintaining health; the selection of food and its uses in human efficiency; the influence of clothing in relation to health and economy; the understanding of adjustments of standards of living to family incomes; the special interests of child life; and the necessity of wholesome recreation in drawing the family together and in developing the moral influences of homes and communities.

The home demonstration work is now a part of the Farm Bureau organizations in the counties and in the state. Within the scope of Farm Bureau work it is now recognized that there is great need for close co-operation of the farmer and his family in maintaining the welfare of rural communities; that the organization can and should foster and stimulate every phase of work that will improve living conditions and insure the permanency of the rural home. The family-type organization has been conscientiously tried out during the last two years and has become the recognized medium through which home demonstrations should be carried on. With a few adjustments found necessary in the working plan, with regard to department responsibilities and committee appointments, the Utah Farm Bureau organizations can undoubtedly wield a great influence in the development of home interests nationally as well as within the state.

The price of success in any problem of today is intelligent concentration. The farm is successful in proportion to the intelligent direction and application of strong practical interests in farm problems. The home is successful in proportion to the intelligent direction and applica-

tion of strong practical interests in the problems of the home. There is great need for further investigations in home problems and for research work, both practical and technical, that will give the same dependable information and standards in home economics that is being so rapidly acquired in agriculture. There is also need for more work in creating a healthy sentiment of the value of home demonstration work so that as fast as the demands for such work arise there will be funds provided for this purpose.

It is agreed by the Extension administration that it is necessary to stabilize the home demonstration work by careful supervision and development of subject matter and the accumulation of reliable data suitable for extension project work fitted to the needs of home women. For this reason the most significant change in the department during the biennium is the addition of four well trained women as specialists in home economics work. In their special lines they are responsible for the development of subject matter and for methods of adapting the same to extension needs. The impetus given the women's work through this concentration has exceeded all expectations and has stimulated and revived interest in every community reached, and has created demands far exceeding the present possibilities of supply.

Home demonstration work is carried on in nine organized counties and in Salt Lake City. Three of these counties have no county home demonstration agent but are continuing project work under the leadership of local women with the assistance of the state specialists, and supervision of State Home Demonstration Leader.

The home demonstration project work is generally conducted under the administration and supervision of the Extension Division of the Utah Agricultural College, operating through County Farm Bureau organizations and co-operating with other agencies interested in the work according to approved project plans.

When a project is approved and chosen as a part of the Farm Bureau community program, a community project leader is appointed by the local Farm Bureau executive committee. In the execution of the project work the local leader acts under the direction of the county home demonstration agent. The local leader organizes class or demonstration groups, the members of which pledge themselves to establish demonstrations in their own homes or in their community, showing the effectiveness with which the principles and information received in project instruction can be used in practice. The results of the demonstrations con-

ducted by members are reported to the project leader, who, in turn, reports to the home demonstration agent. One copy of all such reports is kept on file in the County Farm Bureau office, one is filed at the state office of the Agricultural College where a compilation of all reports is made and sent to the Federal States Relation office at Washington, D. C.

When a project is approved and chosen as a county project a county project leader is appointed by the County Farm Bureau executive committee and should be given place on the County Farm Bureau board of directors as a committee chairman. She acts as county chairman of local committees, working on the same project. She receives all requests for aid from committees desiring such, and submits the requests to the county home demonstration agent who arranges to meet the needs or forwards the requests for specialists' aid to the State Director of Extension work, or to the county agent, sufficiently in advance of the time the aid is desired in order that such requests may be given fair consideration. The county project chairman notifies all local committees of their duties and responsibilities in the work assigned them, and aids the specialist and the home demonstration agent in securing data and reports of work done in the project.

The State Specialist is responsible for subject matter and for detailed plans of work with reference to her special subject, in counties and in communities. She assists the home demonstration agent and the county project leader in planning and scheduling the work in the county. She has general supervision and direction of project plans, methods and records, and visits and gives demonstrations in each organized county as often as possible. The State Specialist furnishes instructions and information for project lesson sheets and for project records and report blanks, as necessary in the progress of the work. She trains the home demonstration agents, and the project leaders so that they may gradually assume more responsibility in establishing and extending the work by progressive follow-up methods. The specialist clearly outlines follow-up methods, with such specific directions as may be necessary. She gathers and compiles all county records of work done in her project and reports in duplicate the progress of her work, with accurate data and at specified intervals to the State Home Demonstration Leader.

Project Activities

Clothing Project

Demands for the clothing project have increased rapidly in all the counties throughout the biennium. In 1919 the work done by the clothing specialist was largely of the propaganda type and used as a leverage in reconstruction work in the county organizations. Large groups of women were met in each community and, with but little emphasis on follow-up work or the training of project leaders, practical demonstrations were given to as many women as could be reached. As a result of this the communities generally accepted the organization work and became active in furthering its permanency. The propaganda clothing demonstrations having accomplished their purpose, in 1920 it was possible to carry on more concentrated work and feasible plans were established for the conduct of projects having definite goals, leaders, pledged home demonstrators and records of work done. According to records of the year there have been

72 project leaders secured,
10 training classes for leaders conducted,
2,907 home demonstrations established,
536 lecture demonstrations given,
280 homes visited,
7,008 total number of people reached by project work.

The clothing project has been carried on under five subdivisions.

1. Dry cleaning and dyeing.
2. Remodeling.
3. Short cuts in sewing.
4. Mill ends.
5. Making of dress forms.

Reports of 1920 show:

2,221 clothing articles made,
3,776 individual patterns drafted,
105 Dress forms made.
\$16,007 conservatively estimated saving.

Millard County reports 494 additional articles made under supervision of local leaders with an estimated saving of \$5,212.70.

Nutrition Project

Due to the children's year program instituted by the Federal Children's Bureau a great number of studies were made concerning the welfare of children. The Bureau requested the weighing, measuring and physical examination of all children under the age of seven in all states. Extensive work was done in Utah in which county home demonstration agents assisted. The data secured by this national survey showed a large percentage of the American pre-school children to be physically deficient. As a result, a keen sense of public responsibility in the welfare of the growing generation was aroused which demanded remedial and preventive measures in guarding the health of the child.

It is generally conceded that faulty nutrition is one of the main factors in producing physical deficiency in the growing child. Parents became aware of this fact and home demonstration agents were frequently appealed to by the mothers with the question, "What can we do about it?" In answer to this appeal the Extension Division undertook to gather information and formulate extension methods by which the mothers could be taught an appreciation of the child's diet, in connection with other hygienic habits of the child for which the mother is largely responsible. A nutrition specialist was appointed who worked co-operatively with the Agricultural College Experiment Station and has been responsible for subject matter and methods in the child nutrition project.

A large part of her work has been done co-operatively with the Salt Lake City Home and School League through the Civic Center of Salt Lake City. In 1918 she assisted in a survey of 6,966 Salt Lake City children under the age of six, of which 3,516 were determined as not normal with respect to height-weight indications. Co-operating with the medical department of the University of Utah she later assisted in a more careful and detailed survey of 745 children. A summary of this survey shows:

Number of children inspected.....	745
Number of children defective	678
	or 90.9%
Average percent of children underweight	64%

During 1920 similar surveys made in five rural communities, with the aid of local physicians, showed practically the same ratio underweight except that the percent-

age runs somewhat higher in the rural districts than in the urban.

Although the data from these surveys cannot, as yet, be considered conclusive, yet the deductions made from them were sufficient reason for concentrating on a health program for the pre-school child which emphasized the fundamentals of nutrition and the home health habits of the child.

Briefly the program is as follows:

1. Height-weight survey of pre-school children.
2. Physical examinations by local physicians.
3. Class training for mother, once a week for six weeks, in health program for the child, directed by the specialist, the home demonstration agent or project leader.
 - (a) Observing signs and symptoms of the nutritional status of the child.
 - (b) Keeping food records of child's diet.
 - (c) Study of food varieties and feeding habits.
 - (d) Study of child's hygienic habits.
 - (e) Establishing health habits of the child.
 - (f) Keeping graphic chart record of child's progress.
 - (g) Continuation of home program until child is up to weight line.

The mother pledges herself to carry on the health program and records of her child in her own home during this period and bring her child to be weighed and measured weekly under supervision of specialist, agent or trained project leader, and hold weekly consultations with them concerning the progress of the child. Thereafter the health program and records are continued in the home for twenty weeks under the supervision of the home demonstration agent who helps the leader or mother check on the records once a month during that time.

The county home demonstration agents are supervising the follow-up work in the nutrition program in the rural districts.

Nutrition activities carried on under supervision of state specialists during the year are reported as follows:

Number of children weighed, measured and given	
physical examination	501
Average percent of children underweight	64%
Number of children as project observation cases.....	182

Number of mothers co-operating and conducting home demonstrations	182
Number completing six weeks' project program.....	160
Number of observation cases underweight.....	171
Range of per cent underweight.....	3 to 22%
Number of children making gains while playing the health game	157
Percent range over average expected gains.....	32 to 119%

Realizing that authorities in nutrition call attention to the fact that 7 per cent underweight means the loss of one year in the child's growth and development, the value of the above work is evident.

As a direct outgrowth of pre-school child nutrition work in Iron County, nutrition classes are being held in one of the large schools in Cedar City. Co-operation of the school board, local physicians and school nurses were volunteered to help the home demonstration agent, and local leaders establish school luncheons for all children who were more than 7 per cent underweight. The parents of these children attend instruction classes to further the correlation of the school work with the home. Up to date 48 children have been admitted to the luncheons and all show decided improvement.

The Farm Bureau women of Weber County felt the need of school lunches in the rural schools and a careful survey brought out the following facts:

1. Children leaving for school in the school wagon at 7:30 in the morning reached school very often with lunches frozen. These lunches remained frozen because of no adequate place being provided for the keeping of lunches.
2. In some schools the only place provided for keeping the lunch was a cold hall, and therefore, many lunches were frozen by noon.
3. During the noon period, boys, especially, did not take time to properly eat their lunch. They would run and play with lunch basket over their arm and sandwich in their hand.
4. Many children came to school with very little or no breakfast.
5. Because of these conditions the school children were not obtaining sufficient food to do efficient school work and to keep the body in a well nourished condition.

The committee obtained the consent of the school board and the school superintendent to try out serving one hot

dish for the school luncheons. Since the school budget did not provide for this extra expense, it became necessary for the Farm Bureau women to assume the responsibility of arrangements and expenses. The women took turns in helping prepare and serve the lunch for a short time, but the plan did not prove feasible, so the Farm Bureau raised special funds to regularly employ women to prepare and serve the food. The girls and boys of the sixth and seventh grades assisted in the serving, clearing up and washing of dishes, and received school credit for the work. Later the school board found it possible to pay for the help and the equipment. During the three cold months of last winter 350 children were served warm food daily in four rural schools. Through the demonstrations effected six schools in the county will serve the school lunch this year and eight more have secured equipment in order to follow the same plan.

A total summary of the nutrition work is as follows:

Training classes for leaders	51
Local leaders secured	86
Home demonstrations established	182
Community demonstrations established	14
Lecture demonstrations given	310
Homes visited	137
Families adopting suggestions	694
Total number of people reached	5,981

Home Health and Nursing Project

The home health and nursing work has been carried on in a general way in most of the counties. The home agents conducted the work themselves or secured the volunteer assistance of physicians or nurses to meet local demands, but did very little definitely organized project work.

A home health and nursing specialist is now employed and since October 1 she has been making special surveys in the counties to determine outstanding needs, and at the same time has given numerous public lectures and demonstrations to stimulate interest and concentration in the subject.

Details of project plans and records are not available for this year's report, but very extensive results are anticipated during the coming year.

The home health and nursing summary for the year follows:

Training classes held	11
Local leaders secured	49
Home demonstrations established	1,029
Lecture demonstrations held	68
Homes visited	32
Total number people reached	2,964

Home Budget

Salt Lake City, Salt Lake County and Utah County have conducted definite project work in the Home Budget and interest is gradually extending. The budget work is particularly fitted for clear-cut project work. It can be conducted most effectually through home demonstrators who pledge themselves to keep accurate household accounts for a period of at least six to twelve months and have their accounts checked once each month by the home agents or trained leaders, who advise with the demonstrators concerning economic divisions and expenditures of incomes. All the women who have kept systematic household accounts acknowledge great help in anticipating the needs of the family, in discrimination of relative values in expenditures, and in the comfort and assurance gained in managing their own households by a systematic plan of thinking ahead. The foods division of the budget has especially appealed to the women from a dietetic point of view, for by their food accounts they can tell definitely whether the family diet has been well balanced.

A summary of sixty-seven rural food records reveals that an average of

- 54% of the family income is spent for food.
- 58% of the food used is produced on the farm.
- 66% of the meat used is produced on the farm.
- 98% of the eggs used are produced on the farm.
- 81% of the dairy products are produced on the farm.
- 42% of the fruit used is produced on the farm.
- 74% of the cereals used are produced on the farm.
- 59% of the vegetables used are produced on the farm.
- 56% of the fats used are produced on the farm.
- 3% of miscellaneous used are produced on the farm.

According to the estimates made from a study of average family expenditures the past year, the following

amounts are considered as reasonable standards of expenditures for a family of three adults and three children:

Food	\$832.00 per year or about \$16.00 per week
Clothing	\$299.00 per year or about \$25.00 per month
Rent	\$468.00 per year or about \$39.00 per month

The year's activities in budget work is summarized as follows:

Training classes for local leaders	32
Local leaders secured	27
Lecture demonstrations held	51
Home visits	63
Home demonstrations established	677
Total number people reached.....	2,170

Since last September the state office has received fifteen requests from different parts of the state for assistance in teaching the fundamentals of the home budgets. These requests came chiefly from the Social Service department of the Relief Society organizations. Modern methods in social relief work require a full understanding of the family budget with practical details in its application. Since the social service movement is for the benefit and betterment of the individual homes, it is logically the duty of the State department to supply the information requested, but with our present funds and workers it is impossible to do so. The demand for budget information is becoming so insistent that a full time budget specialist should be employed in order to develop the subject matter and organize for the work as fast as the demands arise.

Co-operative Household Marketing

Sixty-six local leaders in Salt Lake County, assisted by the home demonstration agent, made careful surveys of textile standards, sizes and quality in package and canned goods, durability and service of household equipment to be found on the local markets. Choice of materials and articles were made and orders pooled and placed with local merchants or with wholesale dealers. They report a total saving of 35 per cent on all money expended for household supplies and equipment. The merchants were induced to carry a better grade of goods to meet the improved demands, and the women have a better appreciation of the purchasing power of their dollar by knowing what, how, when and where to buy. A local merchant declared the

standard of his own business had been raised fully 50 per cent by intelligent buying on the part of the women.

Food Preservation and Preparation

This work was emphasized during the war period and records that have been previously submitted convincingly speak of the tremendous results obtained. During this biennium less stress has been placed on this type of work, but assistance has been rendered wherever there has been local demand.

Rural Home Sanitation.

Annual clean-up campaigns have been conducted in four counties. One county reports 94 per cent of all home yards in thirteen towns cleaned, inspected and approved according to a pledged program. Three hundred pounds of powdered borax was used in fly extermination. The late summer and fall flies were reduced fully 50 per cent in these communities.

Community activities conducted by the Farm Bureau home programs have included the following:

- Improvement of public parks.
- Establishment of public library.
- Establishment of recreation grounds.
- Establishment of community rest-room.
- Extension of electric lighting systems.
- Extension of public water systems.

The following is a summary of work accomplished in definitely organized projects during the biennium:

Number of women members in Farm Bureau.....	1,998
Number of communities adopting projects	130
Number of training classes for local leaders.....	164
Number local leaders secured	340
Number of lecture-demonstrations held	1,576
Total number of people in attendance.....	26,792
Visits in homes concerning project work.....	1,147
Home demonstrations established	5,476
Office Calls	3,481
Letters written	3,677
Bulletins and other literature distributed.....	40,280

Estimated saving in clothing project, 1919.....	\$ 6,832.44
Estimated saving in clothing project, 1920.....	16,007.00

Total	\$22,839.44
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Estimated saving in food preservation, 1919.....	\$12,922.00
Estimated saving in food preservation, 1920.....	7,576.09

Total	\$20,498.09
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Estimated saving in household marketing 35 per cent
on total money expended.

Number of children under 6 years weighed, measured and examined in pre-school child surveys.....	1,342
Average per cent of children underweight.....	64%
Number of children enrolled in nutrition classes.....	187
Number of children responding to health measures....	157
Number of women keeping household accounts.....	924

Total number of women reached in

Organization Project	1,998
Clothing Project	7,008
Nutrition	5,981
Home Health and Nursing	2,964
Food Preparation	2,596
Food Preservation	954
Home Budget	2,170
Home Management	680
Sanitation	573
Household Marketing	448
Food Production	238
Community Enterprises	1,909

Total	27,505
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Since many women were enrolled in more than one project (varying from two to five) the total does not represent individual women reached, but the total women active in different project work.

Respectfully submitted,

RENA B. MAYCOCK,

State Home Demonstration Leader,

BOYS' AND GIRLS' CLUB WORK

To the Director of the Extension Division.

Sir: I have the honor to submit herewith a report of the Junior Extension, of Boys' and Girls' Club Department, for the last biennium.

Purpose of the Work.

Club work is farm bureau work with juniors. It is essentially voluntary in its nature. It aims:

1. To interest farm boys and girls in farm life, thus keeping them on the farm.
2. To help improve agricultural conditions by giving practical training in the best methods.
3. To help boys and girls demonstrate and show others the best way in farm practices.
4. To develop leadership and community co-operation.
5. To give training in business management. (Members must personally own and manage his own project.)
6. To develop initiative.
7. To develop sociability and community responsibility.
8. To insure the future of American agriculture.

Co-operation.

During the war all resources and efforts of the Junior Extension Department were concentrated on food production. The \$2,000,000 worth of products raised by Utah's club boys and girls speaks eloquently for the efforts made. The various organizations co-operated in this work and a large emergency force was maintained; this achievement is phenomenal.

With the coming of peace, quantity production was no longer paramount. New problems demanded solution. Each community had its difficulties. The work of learning and demonstrating the best agricultural methods and practices now seemed most pressing. The last two years have been a time of readjustment, change of policy, and reorganization. With the withdrawal of emergency funds the difficulties were increased. The district-paid leadership dropped from thirty-six to zero, and the full-time county leaders from eight to one.

The matter of co-operation and relationship is one of

the serious problems of club work in Utah. From the beginning this activity had been intimately bound up with the schools for there was no other association then formed through which it could be done, and independent action seemed inadvisable. Each summer temporary leaders were hired in the various districts to organize and supervise clubs. These men and women were usually recruited from the school force.

Club work was taken as a side issue. The division of interest on the part of the leaders was an inherent weakness. Two unrelated lines of activity competing for attention could have but one result. Further, with the beginning of school the teacher was fully occupied with indoor school routine so was unable to get around to personally assist the member finish his project. Many lines of work cannot be finished until October or November. The results were therefore often merely estimates. The member did not get from his project what he should have gotten—training in analyzing results and finishing his job. Laxness of efforts resulted.

This changing agriculturally untrained leadership caused the work to be temporary and more or less lax and undependable in its results.

Besides the relationship to the United States Department of Agriculture, the Agricultural College, with their extensive well trained staffs was not intimate as it should have been. The local farm organizations, too, were more or less distinct and unconcerned with the work.

The new policy determined upon and entered into was to tie the club work up with the farm bureau and the vital community problems. This organization officially adopted Junior Extension work, and workers. The plan for the boys and girls to work shoulder to shoulder with their elders on the community and county programs of work seemed sensible and practicable. Under the direction of permanent full-time leaders—Agricultural College graduates—the boys and girls were in a position to advance materially. Four such men are already in the field doing active work and as soon as funds permit, more will be available. This has greatly enlarged the force of workers determined upon improving agriculture and rural life. The efficiency of the club organization promises to greatly increase the scope and effectiveness of farm bureau work.

Leadership.

As one of the aims of club work is to develop leadership and initiative among farm boys and girls, four leader train-

ing schools have been held. Two of these were held at the College and two at the Cedar Branch. A total of 240 young men and women received instruction and practice in organizing, conducting and leading clubs. Getting in touch with the advanced ideas in agriculture and participation in keen judging competition along various lines prepared these delegates for active community service. Each member agreed to lead a club of at least five boys or girls throughout the summer. It was aimed to render necessary assistance and supervision from the State office so that real leadership would be developed.

In addition to these trained leaders or supervisors, 1,221 boys and girls have had training as club officers. Two hundred and ten other leaders, older boys and girls, and men and women, have received training from county club agents and the State office. Though the results have not always been as hoped for, advancement has been made. In some cases decided progress has been achieved.

Follow-Up Work, Meetings, Etc.

The plan has been to render real assistance to the boys and girls enrolled in the farm bureau projects. We have found that an intimate relation exists between the "follow-up" and the successful completion of the project. Where the club members are visited frequently and helpfully each time with a definite aim the percentage of finishing is very high. We have devised report forms which are suggestive and helpful.

This is the plan in our follow-up work:

1. Visit members once in three weeks. Over 11,000 visits have been made by leaders.

2. Examine records carefully. This is the hardest job of all to have records completed, yet very important work.

3. Look over project carefully—advise regarding it.

4. Furnish bulletins. Approximately 2,300 have been sent out.

5. Visit best projects as a club.

6. Talk over the work with the parents.

7. Hold regular meetings. Invite leading farmers and home-makers to instruct club members. A total attendance of over 85,000 at 5,056 club meetings, indicates the possibilities in this direction.

8. Hold fairs, exhibits, and achievement days, 164 of which have been held.

Exhibits and Fairs.

Realizing the importance of fairs and exhibits in stimulating better effort and in giving a standard to work to, one of the requirements for the successful completion of a project is that the products be exhibited. The member can then compare this work with the work of others and note possible points for improvement. One hundred and sixty club exhibits and fairs have been held where over 3,000 exhibitors displayed their products. At various county fairs club work has contributed fully half to the display. It is not at all uncommon for the boys' and girls' products to win in the open classes.

Judging Contests.

Through the liberality of the State Fair Board a Farm Boys' Encampment was held at the 1920 State Fair. Forty-six project workers were in attendance. Instruction and daily judging contests made time very profitable for all.

Encampment.

Judging contests have been found invaluable in stimulating interest in club work. It is astonishing how quickly the boys learn to pick out the desirable qualities. Many of them far surpass their elders in picking out fine points of an animal, desirable qualities of beets, potatoes and grain.

Each year a keenly fought contest is held at the State Fair for club and high school boys. The Ogden Union Stock Yards last year gave \$110 in prize money. One hundred and twenty boys competed. This is planned for an annual event. North Salt Lake Stock Yards has also instituted an annual contest. This year thirty boys competed. At the Junior Extension schools judging of livestock, grains and tubers are featured. It is our aim to have this training available at all county fairs. In order to raise good products it is imperative to know them.

The girls' work also has offered competition in bread making, canning, sewing, etc.

Runs—Excursions.

It has become a common practice for the club agents and leaders to take the boys and girls of one community to see what is being done elsewhere. Some, as in Uintah and Iron, include the parents in the tour. The best projects are visited and discussed. One boy remarked on returning from such a trip that he had learned more on that trip than

in his entire previous life. Fifty-three such "runs" have been made. Another practice growing in favor is for the club agent to take a number of boys with him where he visits projects. In this way their viewpoint is extended and many new ideas obtained.

Projects.

The projects listed below were worked on by the juniors during the past biennium. These projects were carried on to demonstrate some improved agricultural or home method or practice. They were chosen by the farm bureau as important community problems. Definitely outlined work was followed under supervision. During the past year each local leader has submitted a written program of his contemplated year's work. This also budgeted the time and scheduled the club activities. Specific goals were set down. This has been most helpful in causing a careful analysis of the whole field and in addition gave the leaders a moral responsibility to "carry on." This plan of limiting the projects to those chosen by the Farm Bureau and of giving definite goals and written programs and time budgets is one of the most promising advances made in extension work.

1. Production.
 - (a) Crops: Sugar beets, potatoes, garden, alfalfa seed, seed peas, tomatoes.
 - (b) Bummer lamb, sheep, sow and litter, pig, poultry, dairy calf, baby beef.
2. Foods.
 - (a) Canning, meal preparation.
 - (b) Baking.
3. Clothing.
 - (a) Garment making, garment remodeling, sewing.
4. Miscellaneous.
 - (a) Wage earning.
 - (b) Rodent control.

Number enrolled	4,043
Number finishing project, records, report, and story	2,542
Total value of products	\$120,000
Total cost	62,000
Total saving above cost	58,000

Conclusion.

Mr. Director, this common sense plan of interesting

boys and girls in the farm and making them want to stay there is worth while. The service is economical for with only four paid leaders last year 939 club members completed their projects—records and all. It develops leadership for 240 leaders were trained and developed as local leaders, and 1,244 received experience as club officers. The agricultural development of the State depends to a degree on the extension of this work. The boys and girls need to be linked up with the national organization and have a means of keeping in touch with the Agricultural College and the Department of Agriculture. This makes agricultural progress possible.

Respectfully submitted,

M. H. HARRIS,
State Club Leader.

PLANS AND RECOMMENDATIONS FOR THE COMING BIENNIUM

The Extension Division is definitely planning to put into operation a system of supervision and specialist aid to the counties which will reduce relatively the expense and make for great efficiency. A supervisor's report form and a new outline for specialists' reports have been tested out and will be put into full use during the next few months. These reports will give the director intimate knowledge of just how the work in any county stands at any visit of State workers and of progress made from time to time.

We are planning to limit the expenditures of state and federal funds to a given sum for the salary of each agent and ask the counties for the balance. This will greatly equalize the state aid rendered. The county having the most efficient agents will be required to pay a larger proportion toward the work's maintenance.

So much difficulty has been experienced in getting national authorities on agricultural and home problems during the months of January and February that we plan to hold one week's Round-Up either near commencement time or during the summer, when the experimental plats of the College farm and other farms in the county are at the best for practical field laboratory work. At such seasons of the year great numbers of people could make the big annual pilgrimage to the College by auto and a real out-of-doors encampment held. It would also avoid the big winter jam and difficulty of handling the crowds both in the school and hotels. An altogether better atmosphere would prevail and more quiet, sober thought given both to the College and to subject matter presented. Health conditions are almost universally better during the summer months and the children are out of school at that time of year.

In Home Economics work we plan to emphasize more strongly the training of local leaders in project work, instead of spending so much time on general assemblies. The State can thus be better covered by each specialist and the local leader can give the work to the masses.

Recommendations.

We recommend the amendment of our present State Extension Laws so as to increase the limit of county appropriations and empower the counties to levy a special mill tax for such purposes.

We recommend that county agent work be resumed in Duchesne, Emery, San Juan, Washington and Kane Counties, where vacancies have been forced on account of insufficient funds. The demand of the people of these counties for county agents are very persistent and should be met.

We recommend the extension of boys' and girls' club work in Box Elder, Salt Lake and Utah Counties, and further that only full-time agents be employed for such work in the larger counties. If co-operative work is done on part-time in the smaller counties it should be done only under written projects with the agent's time fully budgeted and him made responsible to the Extension Division for reports, for attendance at conventions properly called and for proper supervision of the extension work done.

The home demonstration agents work should be re-established in Summit, Millard and Davis Counties. Only full-time workers should be employed for this branch of the service.

We strongly recommend the addition of one well trained livestock specialist who can handle the sheep and range cattle work; of one efficient agronomist capable of handling soils and crops work; one human nutrition specialist to devote full time to his work, and the change of home nursing work to full time.

There should be added to the present supervision force an assistant county agent leader and an assistant state club leader who is a specialist in some branch of Home Economics work.

The Division has so many calls for special aid in miscellaneous work not covered in the specialist's projects that a substantial budget is needed for Institute work which could include these calls.

We urge the elimination of any duplication of extension work by state agencies. Wherever such state departments do educational Extension work in Agriculture or Home Economics, it should be done with the sanction and under the direction of the Extension Division of the Utah Agricultural College. Similar recognition should be extended to

other state institutions and departments by the Extension Division.

We urge the adoption by the Financial Secretary's office of a system of monthly financial statements similar to those used by many of the banking institutions. Such statements to go through the Director's office to every extension worker operating on a budget and to the Director for every budget carrying administration of miscellaneous funds. Such statement should show each expense account or bill paid by requisition with the balance after each entry.

We recommend the institution of a one week's summer Round-Up to be held at the College when the experimental plats, College Farm, and farmers' fields are at their best for real outdoor laboratory work, and when many of the people can make their pilgrimage by auto and enjoy a real-out-of-doors encampment.

Every effort should be made to obtain annual passes on the railroads of the State for members of our supervisory staff. These passes would give a freedom of action which would make the Division so much more effective in meeting the great demands of the people for service.

We are in need of office quarters which will properly house the staff and make for greater efficiency of office work. The division should have at least one portable moving picture machine costing a moderate sum.

We suggest the establishment of at least five College fellowships in advanced extension courses to stimulate intensive study and practical laboratory work in extension methods. The fellowships should be open to Juniors and Seniors and cover a period of not less than nine months nor more than fifteen months. It should require at least twenty-four weeks of field work with experienced extension workers and twenty-four weeks of instructional courses, the field work to include one winter quarter and any one other quarter. Each fellowship should carry about \$400 per annum.

The Extension Division feels very keenly its lack of fundamental information on home economic problems and therefore urges the establishment of research work in these lines by the Utah Experiment Station. Such work should include Chemistry and Physics of textiles; Human Nutrition, efficiency methods in the home, including budget and equipment, and wearing apparel, as related to health.

We are in great need of information on practical methods of controlling certain noxious weeds under our arid climate on irrigated farms. The need is really acute. The Experiment Station could render a genuine service to the

farmers of the State by making these determinations by research methods.

More acute data is needed on the feeding value of beet top and sunflower silage as compared to other silage crops and to hay. The cost of growing beef steers, lambs, and wool under range conditions needs to be determined as a factor in marketing and farm business.

The supply of records showing accomplishments of extension workers, new information on research work of the Experiment Station and of the work of College instruction is so enormous that the people of the State should have it in a readable form while it is new and valuable. Our present publicity fund and agents are insufficient to meet this need. We urge, therefore, that the College proper, the Experiment Station and the Extension Division employ one full-time publicity and editorial man to handle all publicity work for the whole institution and edit all publications going out from all divisions. Such agent should not be tied to teaching but given a travel budget and time to visit all sections of the State, to spend sufficient time with the various extension agents and farm bureaus to know their work and methods and to study in detail the work of the experimental farms, laboratory research and actual classroom laboratory and shop work of the institution. Under this method the publicity agent will be on the job all the time and can keep things moving in a publicity way.

SUMMARY

In summing up the work of the Extension Division for the biennium, the following items are important:

1. An exceptionally large number of changes have taken place in the personnel of the staff, the loss of war emergency funds being largely responsible for the reductions in number of workers and low salaries for resignations.

2. A total of \$300,993.85 was spent for extension work, of which \$145,703.14 was received from the U. S. Department of Agriculture, \$62,826.67 from counties, and \$92,464.04 from state funds.

3. The organization of work is in a better condition than ever before, except for the specialists' work in agriculture. Project work in the local and county farm bureaus is in excellent condition.

4. Practically all State and Federal agencies available have co-operated fully with the Division.

5. The Division needs some improvement in office quarters and some new equipment.

6. The Round-Ups and conventions have been seriously interfered with, due to poor health conditions.

7. Lack of funds has materially reduced the number of publications put out.

8. Exhibits were made both years at the State Fair and all counties requesting judges for county fairs were given aid.

9. There have been given 54 courses in correspondence work with an enrollment of 1,004 persons in 25 counties.

10. There have been 53,633 personal conferences held, either in the county offices or on the farms and in the homes on official business.

11. There have been held 11,175 meetings and demonstrations, at which the total attendance was 216,108 persons.

12. Organized instruction was given to 27,505 persons in different lines of Extension work.

13. Farmers were assisted in organizing irrigation and drainage systems, embracing 119,106 acres of farm land, and in cleaning up 154,123 acres of land from noxious weeds.

14. The following savings were effected as a result of organized Extension work in co-operation with the county farm bureaus:

Clothing Projects	\$ 22,839
Food Preservation	20,498
In Boys' and Girls' Club Work.....	58,000
Co-operative Marketing	210,017
Agricultural Projects	1,932,389
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Total	\$2,243,743

Respectfully submitted,

R. J. EVANS,

Director, Extension Division.

BRANCH OF THE AGRICULTURAL COLLEGE

To the President of the College:

Sir: Herewith report of the Branch College for the last biennium, together with statement of needs and financial requirements for the next biennium:

The B. A. C. is rapidly approaching its pre-war status as to enrollment and general activities. Last year showed a marked improvement over the preceding low-tide year, while this year promises to be the most successful since the establishment of the institution.

Our faculty is unusually strong and efficient this year for the technical and industrial courses of secondary grade, and for all the junior college work we maintain. The condition of the student body is most gratifying in numbers, interest and general morale.

Evidence of the stimulating influence, encouragement and real service of the B. A. C. in educational uplift and industrial development is to be seen in practically every community and county in Southern Utah today.

The most pressing needs of the institution that demand attention are increased maintenance fund; more floor space for Departments of Agriculture, Home Economics, Biology, automobile and tractor shops, and campus improvements.

I desire to recommend that an effort be made at the next session of the Legislature to provide a permanent and regular maintenance fund of at least fifty thousand dollars a year for the B. A. C., this sum not to include special improvements and equipment. This amount of money will be required to take care of the regular over-head expenses and keep the faculty organization and morale up to the present high standard. In my judgment, this matter should take precedence over all other matters pertaining to the B. A. C. at the present time.

The various departments mentioned above are very much over-crowded even at this time of year, and the condition in the automobile and tractor shops during the mid-winter quarter will be a very serious problem this winter. On account of this condition in so many vital departments of this practical, industrial, pioneer school, I feel that it is my duty to urge upon the President and Board of Trustees the urgency of the need of new buildings.

In this connection it should be explained that one of the most serious limitations to the further growth of the

Branch College is the housing problem. Cedar City is taxed almost to the limit to take care of its rapidly growing permanent population, thus leaving very little room for students and faculty families. I believe the most logical plan or solution of this problem is to maintain a girls' dormitory in connection with the proposed new building for Home Economics Department. This new building would release rooms now occupied by this department to the Agricultural and Biological Departments and thus solve the entire problem of floor space, except shops, which will require the erection of the center or main part of shop building shown on the campus plan.

The Biological Department is absorbed or submerged by the Agricultural Department at the present time for two reasons—necessity for economy in maintenance and lack of room. This condition has maintained for several years and is now a matter for serious concern. The work in Biology is fundamental but can only be secondary under present conditions. It naturally follows that with the proper maintenance fund provided and floor space made available, this department will be made co-ordinate with others in the Institution.

While the buildings of the B. A. C. are now in excellent condition, and the general equipment admits of efficient work throughout the school, the various small sums of money shown in the following summary will be required to maintain this condition and to make necessary additions during the next biennium.

Following is a summary of financial needs as submitted to your office in B. A. C. budget of recent date, with item of automobile shop added:

MAINTENANCE

Deficit at close of year June 30, 1919.....	\$ 3,566.25	
Deficit at close of year June 30, 1920.....	13,047.61	
Deficit at close of year June 30, 1921, estimated	25,000.00	
<hr/>		
Total deficit for three years' period ending June 30, 1921.....		\$ 25,000.00
Estimated added maintenance (exclusive of mill tax), for biennium closing June 30, 1923	20,000.00	20,000.00
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Grand total of special maintenance for five-year period ending June 30, 1923.....		\$ 45,000.00

NEW BUILDINGS

Women's Building and Girls' Dormitory (equipped)	\$150,000.00	
Green House	5,000.00	
Shed for Farm Machinery and Implements.....	1,000.00	
Small Fireproof Storage Room.....	500.00	
Central part of Automobile Shops.....	15,000.00	
	<hr/>	
Total New Buildings.....		171,500.00

IMPROVEMENTS

Repairs and Improvement of All Buildings, Heating Plant, Campus, Barns, Sheds, Yards, Fences, Water System, etc.....	8,000.00
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EQUIPMENT

For Replacement of Broken and Worn-out, and Addition of New Equipment in All Shops, Laboratories, Commercial Department, Farm, Livestock, Library, etc.....	10,000.00	
	<hr/>	
Total for Improvements and Equipment....		18,000.00

SUMMARY

Additional Maintenance	\$ 45,000.00
New Buildings	171,500.00
Improvements and Equipment.....	18,000.00
	<hr/>
Grand total	\$239,500.00

Respectfully submitted,

ROY F. HOMER,

Principal, B. A. C.

DEPARTMENT OF FEDERAL BOARD FOR VOCATIONAL EDUCATION

To the President of the College:

Sir: As soon as the Armistice was signed, the Federal Board for Vocational Education immediately began organizing its work for rehabilitation of disabled soldiers, sailors and marines.

Along with other similar institutions, the Agricultural College of Utah was asked to train disabled men in the various lines of work which we were teaching here. The first men to arrive came in March, 1919, and the number has steadily increased from that time until now we have an enrollment of 170. The registration for the last few months is as follows:

February, 1920	120
March, 1920	117
April, 1920	113
May, 1920	118
June, 1920	102
July, 1920	105
August, 1920	100
September, 1920	139
October, 1920	141
November, 1920	156
December, 1920	170

The tuition from these men has made it possible to extend our work this year, which we probably would not have been able to do had it not been for the revenues derived in this way. Besides this, the Federal Board for Vocational Education has loaned us approximately \$25,000 worth of machinery. This machinery includes:

- 4 16-inch lathes
- 1 Turret lathe
- 1 Gap lathe
- 2 Drill presses
- 1 Power hack saw
- 2 Grinding-wheel stands.

Also, about six chucks for the lathes which we already had and, in addition, several hundred dollars worth of small tools and equipment. This machinery is all set up and has made it possible for us to take care of a great many more men that we otherwise would have been able to do had it not been for this machinery.

The Federal Board, at the present time, has one man stationed here as co-ordinator to aid us in handling their work.

We are offering, besides our regular Vocational courses, special courses in the following lines:

- Agriculture, with majors in Animal Husbandry and Agronomy
- Bee Culture and Poultry Work
- Highway Construction
- Concrete Construction
- Farm Mechanics
- Automobile and Tractor Work.

I am pleased to report that the work at the present time is progressing very satisfactorily.

Respectfully submitted,

RAY B. WEST,

Director Vocational Education.

DEPARTMENT OF ACCOUNTING AND BUSINESS PRACTICE

To the President of the College:

Sir: I have the honor to submit herewith report for the Department of Accounting and Business Practice for the past biennium.

The aim of the Department has been to meet the needs of two classes of students: (a) Vocational—those of mature years who have had practically no high school training, and (b) College—those who have completed high school.

Vocational students generally want short, rapid-fire courses preparing for immediate employment in the business vocation. To these we offer opportunities to qualify for positions as stenographers, typists, bookkeepers, calculator operators, office clerks and posting machine operators. Students may, by spending a year or two, prepare to do creditable work in the foregoing vocations.

The College student generally expects to spend four years in preparation for the professions of business. To these we offer opportunity to qualify as certified public accountants, cost experts, heads of accounting departments, court reporters, private secretaries and office managers. The training afforded by the department is also fundamental in the preparation for the professions of credit men, efficiency engineers, etc.

Subjects	1918-19		1919-20	
	Classes—Enrolled		Classes—Enrolled	
Accounting—Res.	19	194	21	338
Accounting—Ogden Extension..			2	24
Accounting—Correspondence....				
Office Management.....	Every hour	119	Every hour	71
Typewriting	daily	254	daily	440
Stenography	8	130	14	175
Penmanship	3	19	2	67
Commercial Arithmetic			2	93
English			1	42
Total		716		1250

The Department has extended the scope of instruction this year by offering Gregg as well as Pitman shorthand.

Instructors—The Department now employs four full-time instructors as compared with three and one-half the two previous years. About one-half of Miss Cecelia Kays' time is given to Business English, so that the teaching force has not been enlarged, and in view of the fact that we have added two courses in Gregg shorthand, the teaching load has been increased. Should the Ogden classes continue or increase and should we experience our accustomed increase in residence enrollment it is possible that we shall have to add to our present teaching force.

Correspondence and Extension—In 1919-20 two classes in Accounting were given in Ogden with about 25 enrolled. This year it has grown to 50. We have from 10 to 15 enrolled in the Correspondence Department each year.

Budget—In View of the increased maintenance cost of equipment it will be necessary to increase the Department appropriation for the ensuing year. It will be necessary to exchange at least half of the typewriters in order to keep up the efficiency of this equipment.

Respectfully submitted,

P. E. PETERSON,

Professor of Accounting.

DEPARTMENTS OF RURAL ARCHITECTURE, SURVEYING AND ROADS

To the President of the College:

Sir: I am pleased to report for the departments of Rural Architecture, Surveying and Roads, that they are showing an increased interest, as indicated by the following tabulations of the courses offered last year and this year, and the number of students in each course.

	1919-1920	1920-1921
Rural Architecture		
Rural Arch. 3, Materials of Construction	15	6
Rural Arch. 4, Strength of Materials	17	6
Rural Arch. 9, Building and Contracting	17	Spring Term
Summer—Concrete Construction	25	
Concrete Testing	25	
Surveying		
Surveying 1	26	35
Surveying 1-a	22	Spring Term
Surveying 2	5	7
Surveying 1, Summer	20	Summer
Roads		
Roads 1	10	33
Roads 2	16	22

A great deal more work could well be done in the line of Rural Architecture to aid the farmers in their farm building if more help in this department could be provided, but as the one at the head of this department is also head of the Department of Surveying and Roads and Director of the School of Agricultural Engineering and Mechanic Arts, it is impossible to give the time to this work which the work really merits. An assistant who could do considerable of the routine work would make this department one of the largest in the institution and one of great service to the

farmers of the state, as general plans could be sent to them covering all kinds of farm structures which would give them a better idea of the arrangement and construction of their buildings.

The increase in interest in the Department of Roads is due, more than likely, to the increased interest shown throughout the country in the construction of better highways; and at the request of the Federal Board for Vocational Education, the College is training about 40 men in this line of work. The Road work and the Irrigation work requires that students be trained in surveying. For that reason the Surveying department is growing very rapidly.

Respectfully submitted,

RAY B. WEST.

DEPARTMENT OF AGRONOMY

To the President of the College:

Sir: I have the honor to report herewith the Department of Agronomy for the last biennium.

The Department has recently moved to the new Plant Industry Building. In the new quarters much better facilities for doing good work are offered than previously. This insures a gradual improvement in the quality of the teaching.

The demand for instruction in Agronomy grows steadily. Since it is the most general department in the School of Agriculture, a relatively large number of students call for its work. During the last ten years 144 students have graduated with majors in Agronomy. This is more than double the number majoring in any other department of the college.

Many of the graduates in Agronomy have found employment as county agricultural agents and experts for corporations interested in farming. Some are engaged in teaching and I am happy to say that many have returned to the farm where they have become leaders in better farming in their communities.

At the present time the following courses are offered in the Department:

- a. Elementary Agronomy.
- b. Dry-Farming.
- 1a. Crop Production.
 1. Cereal Crops.
 2. Root Crops.
 3. Forage and Miscellaneous Crops.
 4. Seeds and Weeds.
 5. Judging and Grading Crops.
 6. Soils.
 7. Comparative Soils.
 8. Management of Arid Lands.
 9. Practical Plant Breeding.
11. Advanced Laboratory in Soils.
12. Seminar.
13. Research.
14. History of Agriculture.

Of the courses listed above, Plant Breeding and His-

tory of Agriculture have been added during the last bien-nium. During this same period the Farm Management and Irrigation courses given by the Department have been transferred to departments that have been organized in these particular subjects.

During the present year it has been necessary to turn away students from some of the courses because the classes were full and the instructing staff was not sufficiently large to permit of the organization of additional sections.

The changes in personnel of the Department have been: The resignation of I. J. Jensen to take up Smith-Hughes work in Arizona and the appointment of M. D. Thomas, a graduate of Oxford University, and A. F. Bracken, formerly of the United States Office of Cereal Investigations. Both of these men are spending most of their time in Experiment Station work.

The Department is very much in need of additional instructing help. The numerous calls for committee, extension and other work outside of the Department and the large registration of students in the Department, makes it impossible to maintain as high a standard in the work as if more help were available.

In the erection of the new building, sufficient funds were not available to entirely finish it. Many items of standard equipment that should have been installed had to be dispensed with. When the third story of the building is completed, means should also be provided to complete adequately the portion of the building now occupied by the Agronomy Department.

Respectfully submitted,

F. S. HARRIS,

Professor of Agronomy.

DEPARTMENT OF ANIMAL HUSBANDRY

To the President of the College:

Sir: I have the honor to report herewith the Department of Animal Husbandry for the past biennium.

Course	1918-19				1919-20				Instructors
	1	2	3	ss.	1	2	3	ss.	
Animal Husbandry c.....						70			Prof. Carroll
1	28	29			45	27			Prof. Caine
2						28			Prof. Caine
3						11	10		Prof. Carroll
3a.....					13				Prof. Carroll
4							12		Prof. Carroll
5					3				Prof. Caine
6		23				26			Prof. Caine
8		20	10				25	18	Prof. Caine
Total	28	72	10		61	162	47	18	
Total for year.....	110				288				

Teaching Force

Prof. George B. Caine had the Department alone during the year of 1918-19, as Dr. W. E. Carroll left for army service before the school year opened and did not return till the following June. This of course necessitated the elimination of certain courses to get the work down to the capacity of one man.

It should be noted also that Prof. Caine is head of another Department as well as assisting in the Animal Husbandry work.

In addition to the class work one member of the Department is on half time with the Station. We have been called out to judge live stock at various county fairs of the state and have been called into three of our neighboring states on similar work.

One member is secretary of the Utah Dairymen's Association, another is secretary and executive officer of the Utah State Board of Horse Commissioners.

The routine record work necessary to keeping the barn records straight and the actual supervision of the barn work should be mentioned as demanding considerable time.

The next biennium should see the addition of at least one man between this Department and the Department of Dairying. This would enable Prof. Caine to devote more of his time to his own Department and would enable us to add two or three courses that should prove very popular and helpful. As a single example might be cited a thorough course in meats.

We have been unable to give attention to sheep husbandry that its extent and value in the state demands. If we could get a good shepherd this could be done. This same man might also include hogs work, which is very much needed.

Equipment and Repairs

The most pressing need in this line is the renewal of practically all of the fences around our fields and pastures. It will be practically impossible to enter another summer with the fences in their present worn-out and patched-up condition.

The Department is in need of some office and classroom equipment. The mounting and framing of pictures which are used as type pictures in class work is much needed.

The matter of the length of the hours and Sunday and holiday work of our men at the barn is also a matter that should be adjusted. Their salaries should be increased by at least one-seventh over those for similar work where Sunday and holidays are observed, such as teamsters and farm hands.

Respectfully submitted,

W. E. CARROLL,

Head of Department of Animal Husbandry.

DEPARTMENT OF POULTRY HUSBANDRY

To the President of the College:

Sir: I have the honor to report herewith the work of the Poultry Husbandry Department for the past biennium.

In addition to the regular work in poultry which has been carried on as in the past for the regular college students, several courses have been organized to take care of the young men sent here by the Federal Board for Vocational Education for special training in practical poultry raising. Many of these students are not prepared to take the regular college courses. In this special vocational work there have been given this year and last twelve courses with a total registration of 118. In addition there has been in the courses of college grade a total registration of 61.

This work has been quite a burden in view of the fact that there was only one instructor employed for 1919 on one-half time and for 1920 less than one-third time for teaching these classes. Additional help and equipment should be provided if the present enrollment continues.

Respectfully submitted,

BYRON ALDER,

Assistant Professor of Poultry Husbandry.

DEPARTMENT OF FINE ARTS

To the President of the College:

Sir: I have the honor to report herewith the Department of Fine Arts during the last biennium.

The following courses were given by the Department during the past two years:

COURSES		NUMBER OF STUDENTS				
Art 1—	Section	1918-19	1919-20	Teacher		
Study of Composition of line and form and the principles of good taste	A	No school during fall term	27	J. S. Powell		
	B		31	Calvin Fletcher		
	C		21	Miss Nielson		
Art 2—						
Art appreciation and composition study of painting, sculpture, architecture	A	12	12	Prof. Powell		
	B	15	27	Prof. Fletcher		
	C			Miss Nielson		
Art 3—						
Free hand drawing for students of Mechanics Arts			1			
Art 4—						
History of Art and Appreciation.....			5			
Art 5 (Studio)—						
Drawing, Painting, Sculpture illustration, illustrating for advertising, illustration for scientific purposes and pictorial composition		1918-19	1919-20			
	Terms—1	2	3	1	2	3
		11	14	14	8	9
Art 6—						
History of Art.....						
Art 7—						
Aesthetics	3					

The teaching force is adequate for internal instruction at the present time. There is becoming a demand for more work in sculpture, especially ornamental sculpture, to meet the needs of men training for architecture and for tradesmen in ornamental work in building. As soon as possible an instructor in modeling and sculpture should be employed.

There has been a great demand through the Extension Division for instruction in house decoration and home betterment. We have not been able to give them much help because of the great amount of time required by our work at the College.

The work of the Department has been greatly handi-

capped by the lack of equipment. A few casts of sculpture have been purchased. To meet our needs others should be added each year.

A few reproductions of paintings have been added but because of lack of funds we have not been able to frame them properly. One of our greatest needs is to surround our students with an environment of good works of art, both pictorial, sculptural and architectural. We should add to our collection of plaster casts and to our paintings the best examples of art. A study of art calls for a continued exercise of judgment and a stimulation by the influence of good examples.

Exhibitions of work of art from the artists of the state and traveling exhibitions of artists from other states should be secured for exhibits at the College.

The financial needs of the Department of Fine Arts for the coming biennium are as follows:

Equipment, plaster casts	\$600.00	
Reproduction of paintings	400.00	
Frames, easels, model stands and pedestals	300.00	
	<hr/>	\$1,300.00
Supplies, models, still life and other supplies	700.00	700.00
	<hr/>	<hr/>
Total		\$2,000.00

Respectfully submitted,

J. S. POWELL,
Professor of Fine Arts.

DEPARTMENT OF APPLIED ART

To the President of the College:

Sir: I have the honor to submit herewith report of the Department of Applied Art for the past biennium.

ENROLLMENT 1918-19—TAUGHT BY PROFESSOR FLETCHER

WINTER TERM			SPRING TERM		
Course	Students	Total Hours	Course	Students	Total Hours
Art 21—Sec. 13	15	75 Lab.	Art 2 (Fine Art).....	15	75 Lab.
Rur. Arch. 11.....	2	12 Lab.	Rur. Arch. 11.....	2	18 Lab.
Art 27	52	278 Lab.	Art 27	37	299 Lab.
Art 25	3	27 Lab.	Art 25	2	12 Lab.
Tex. and Clo. 5b.....	8	72 Lab.	Art 22	5	20 Lec.
Art 22a	5	20 Rec.	Eng. 21	4	20 Lec.
Magazine articles 5. Pub. lectures 4.					

SUMMER QUARTER 1919—TAUGHT BY PROFESSOR FLETCHER

First Term:	Enrolled	Second Term:	Enrolled
H. Art Survey	6	H. Art Survey.....	5
Art 27	34	Art 27	24

ENROLLMENT 1919-20—TAUGHT BY PROF. FLETCHER AND MISS NIELSON

FALL TERM			WINTER TERM		
Course	Enrolled	Hours	Course	Enrolled	Hours
Art 1b (Fine Art).....	32	160 Lab.	Art 21-b	30	150 Lab.
Art 1c (Fine Art).....	21	105 Lab.	Art 21-c	18	90 Lab.
Art 27	50	297 Lab.	Art 27	60	375 Lab.
Tex. & Clo. 5a.....	12	36 Lec.	Tex. 5b	18	18 Rec. 108 Lab.
H. A. 22 or Art 22a.....	23	69 Lec. 92 Lab.	Art 22b	24	72 Rec. 144 Lab.
			H. A. 11a.....	38	114 Rec.

SPRING TERM

Art 2-b (Fine Art).....	29	144 Lab.
Art 27	83	332 Lab.
Art 25	1	9 Lab.
Rur. Arch. 11	2	12 Lab.
Ethics (Ag. Ed. 9).....	12	60 Rec.
H. A. 11b.....	27	81 Rec.
Magazine articles—4. Public lectures—14.		

SUMMER, 1920—TAUGHT BY F. C. BRAITHWAITE

Present enrollment, 1920—Fall. Taught by Prof. Fletcher and Miss Maurine Peterson.

FIRST TERM Fifteen students		SECOND TERM Fourteen students	
Course	Enrolled	Hours	
Art 1b .....a.....	25	75	Rec.
Art 1c	18	54	Rec.
Tex. 5a	17	51	Rec.
H. Ad. 11a.....	10	30	Rec.
Rur. Arch.	1	9	Lab.
Art 25	1	9	Lab.
Art 27	46	297	Lab.
Public lectures—2.			

The Applied Art work has never been in better condition than during the past biennium in spite of the high cost of all lines of art materials, which has handicapped us to some extent. We have received more outside encouragement and support than ever before. From the High Schools doing Smith-Hughes work have come repeated requests for aid in equipping teachers of related art. The commercial field is calling for designers, show card and sign writers, and interior decorators. Along with this has come aid from the Beaux Art Institute of Design, National Federation of Art and Society of Independent Artists which through competition and aid in placing students in touch with employers has done a great deal towards supplying the needs of manufacturing and commercial enterprises with the service they need as well as giving a greater outlet for those trained along these lines. We are keeping in touch with all these organizations by being on their regular mailing lists and are encouraging students to participate in the national competitions.

Since the addition of another instructor we have been able to more thoroughly organize the class instruction and increase its value many fold. This year we are rejoicing at having access to a stereopticon in our lecture work and sincerely hope one can soon be permanently installed in the department as its use has vitalized our class instruction even more than we thought possible. The special lecture room and craft shops provided during the past biennium are immensely helpful. Our skylight with its dirty awning is still in need of attention and the plumbing men-

tioned in our last report is still as much needed as then. More locker space is needed and particularly are we in need of more library material and more good illustrative material showing the student what is really fine. In this connection also we would call your attention to the work of the National Federation of Arts, which is circulating collections of paintings, etc., from the Metropolitan and other art museums and collections of art from our most prominent American artists. These are available at from \$50 to \$500, according to the size and importance of the collection. As soon as possible this Institution should be put on the circuit so our students and the public may enjoy what only the few could enjoy formerly.

Last year many insistent calls were made on us for more extensive work in costume and home furnishing work in the Extension Division. We could not nearly supply the demands made on us and it would seem advisable to add such an expert to the Extension force so this work can be carried consistently and not spasmodically to the people. If this cannot be done I should suggest that definite slogans be taken in each county with the idea of correcting the most serious defects in our furnishings first, and come at it gradually. We believe some scheme could be formulated along this line to give aid where it would seem most needed.

We are happy to report in conclusion that we are getting the heartiest co-operation in our work from the departments correlating with our work, especially from the Departments of the School of Home Economics.

Respectfully submitted,

CALVIN FLETCHER,

Professor of Applied Art.

DEPARTMENT OF COMPETITIVE ATHLETICS

To the President of the College:

Sir: I have the honor to report herewith the Department of Competitive Athletics for the last biennium.

Competitive sports, long since recognized as one of the greatest factors, if not the chief, in cementing together the various units which make up a college community, and in stimulating a strong spirit of college loyalty, and admitted as the very core of most systems of physical education in college, received great additional impetus from the lessons of the world war. Competitive athletics hold a favored place in the heart of America and a unique place in intercollegiate relations.

It is, therefore, a gratification to be able to report that the Utah Agricultural College has made and is continuing to make marked progress in adding to the attractiveness and usefulness of athletics as a department of training in the College.

Competitive sports in the last biennium have been marked by much larger varsity squads, increased emphasis on inter-mural competition and on Freshman teams, a broadening of our intercollegiate athletic relationships, the introduction of some more minor sports, a splendid student interest and the enlisting of greater public support. And, incidentally, the teams which have represented us in intercollegiate competition have been successful in winning a large proportion of their contests and in acquitting themselves creditably in all of them. But, better than that, the teams have included in their personnel many of the students who are leaders in scholarships and various other branches of student activity.

That the aim to enlist all the physically fit male students in some form of competitive play, either in inter-mural or intercollegiate, is gradually being achieved, is borne out by the tables of figures herewith included.

Suggestive of the growth of athletics in the College are the facts that the present varsity football squad includes twenty-six players, and the Freshman squad forty-four; that indoor track and field work and cross-country running have been introduced, and that swimming and tennis are enjoying constantly increasing popularity.

The U. A. C. made its bow in inter-mural indoor track and field competition by winning the A. A. U. meet held

in Salt Lake City during the winter of 1919. Sixty-four entrants, representing the various classes, clubs and schools competed in the first A. C. cross-country run in the spring of 1920.

Statistical Report

Number of men that tried out for College and Freshman football teams in 1920:

College - 34

Freshmen 47

For College and Freshman basketball teams during 1919-20 season:

College - 24

Freshmen 32

For College track and field team during 1920 season:

College - 45

For College baseball team during 1920 season:

College - 32

An interclass series as well as an interfraternity series in basketball was held in which ten squads of eight to a squad competed, making a total of eighty players.

Sixty-five students competed in the spring cross-country run.

Forty-eight students played baseball in the class series held during the spring of 1920.

Twenty tennis players took part in the spring tryouts of 1920.

Large numbers of students were always interested in swimming, boxing and wrestling during this period.

A total of over four hundred students took part in competitive sports during this one year.

Colleges competed against during the 1919-20 season:

1. University of Utah.
2. Brigham Young University.
3. Brigham Young College.
4. Idaho Technical Institute.
5. University of Montana.
6. Montana State college.
7. University of Colorado.
8. Colorado Agricultural College.
9. Colorado School of Mines.
10. University of Nevada.
11. University of Wyoming.
12. Montana School of Mines.

The Freshman teams competed with the high schools of Utah and Idaho in football and basketball.

In order to carry out the schedules for the next two years the following amounts of money will be needed for equipment:

Football	\$2,000.00
Basketball	500.00
Baseball	350.00
Track and Field Sports.....	400.00
Other Sports	100.00
	<hr/>
	\$3,350.00

No report on the athletic situation in the College would be complete without a word of commendation for the system of student management and the efficiency of the managers.

Although increased public interest in our intercollegiate competition has resulted in greater financial returns for our games, the very high cost of athletic materials, greatly increased transportation costs and the rapidly growing need for equipment to accommodate the large numbers desiring to participate make our problem of financing athletics constantly more difficult.

Suggestions

If a committee appointed by you were to investigate our athletics from the standpoint of the demands made on the members of the College squads for time, personal sacrifice, moral stamina and mental effort, the committee would, I feel confident, join with me in recommending that some specific amount of collegiate credit be awarded for athletics, if only enough to add a little dignity to the work.

I should also suggest that participation in inter-mural athletics be allowed as a substitute for required courses in physical education according to some definite system, as adopted in various other institutions, conspicuous among them the Oregon Agricultural College. A clubhouse on Adams' Field in which visiting and home players might dress and shower would overcome the inconvenience of the remoteness of the College gymnasium from the field of play, which is important, particularly in inclement weather.

Several outdoor handball courts would provide a means of athletic exercise for scores of students and faculty members whose interest in exercising in other ways is insufficient.

Respectfully submitted,

E. L. ROMNEY,
Athletic Coach.

DEPARTMENT OF BACTERIOLOGY AND PHYSIOLOGICAL CHEMISTRY

To the President of the College:

Sir: I have the honor to report herewith the Department of Bacteriology and Physiological Chemistry for the last biennium.

The courses offered by the Department, together with the number of students in each, are listed below:

	1918-19	1919-20	1920-21
Agricultural Bacteriology	35	43	15
Household Bacteriology....	13	60	50
Pathogenic Bacteriology..	8	8	spring term
Dairy Bacteriology	8	12	winter term
Sanitation	44	18	18
Physiological Chemistry..	20	8	14
Advanced Biochemistry ..	(not given)	(not given)	3
School Sanitation	(not given)	36	34
Military Sanitation	370	(not given)	

Since the spring of 1919 Mr. Goldthorpe has been on leave of absence to pursue advanced work at the University of Chicago. No appointment has been made to fill his place. Hence, during 1918-19 and 1919-20 the teaching has been about equally divided between Assistant Professor Carter and myself. During the present year Prof. Carter has taken over the teaching of Physiology, with the result that I am doing the greater part of the teaching during the present year.

In addition to teaching, the members of the Department have been carrying on definite lines of research, the results of which have been published in the scientific journals of the country. The results so obtained have received favorable comment in this and foreign countries.

The increasing demand for work in Household Bacteriology, Sanitation and School Hygiene makes it imperative that there be another full-time assistant added to the teaching force of the Department next year. This would relieve the head of the Department from much of the routine

work and give more time for advanced teaching and research, both of which must be neglected under the present arrangement—as is witnessed by the fact that the Department has had to omit the work in Soil Bacteriology during the last biennium although called for by properly qualified students.

Moreover, the necessary supplies for the number of students which are registered in Bacteriology cannot be purchased for less than \$1,000. An appropriation less than this to the Department yearly means that some of the laboratory work must be eliminated.

The Department is badly in need of additional equipment, especially microscopes with which bacteriological work can be done. Therefore, the Department should receive \$1,500 for the purchase of microscopes and other necessary equipment.

Respectfully submitted,

J. E. GREAVES,

Professor of Bacteriology and Physiological Chemistry.

DEPARTMENT OF BOTANY

To the President of the College:

Sir: I have the honor to report herewith the Department of Botany for the past biennium.

The Botany Department is very happy in its new quarters. The fact that desks, equipment, etc., are arranged in a convenient way and that the laboratory is a most pleasant place to work in, has contributed greatly to the excellent work the students are doing and to the enthusiasm they have for their work.

The year 1918-19 was badly broken into by the war and the "flu," consequently the registration in botany was not large. We had 26 students in Botany 2 and 17 in Botany 1. The students were unusually earnest and did splendid work completing the two quarters' work from February to June.

During 1919-1920 the following courses were taught:

Course	Quarter Given	Credits	Students
Botany 1	Spring	5	87
Botany 2 (in 2 sections)	thruout year	15	53
Botany 3	Spring	3-5	10
Botany 5	Winter	4	12

During 1920-21 the following courses are being offered:

Course	Quarter Given	Credits	Students
Botany a	Winter	3	---
Botany 1, Sec. 1	Fall and Winter	6	16
Botany 1, Sec. 2	Spring	5	---
Botany 2, Sec. 1	Fall, Winter, Spring	15	25
Botany 2, Sec. 2	Fall, Winter, Spring	15	26
Botany 3	Spring	3-5	---
Botany 5	Fall	3-5	12
Botany 5b	Winter	3-5	---

In addition three students are doing special advanced work for credit.

During the last three years the Botany Department has broken away from precedent in the manner of teaching botany. The majority of the students who take botany are students who are specializing in other fields than botany. These students usually get but one course in botany and consequently the attempt is made to give them the work that will prepare them best for their major and that will give them a love of the beautiful and an appreciation of and a speaking acquaintance with plants and their life processes. The enthusiasm which has followed this change of method and subject matter has been ample recompense.

Students in botany are handicapped by the lack of greenhouse facilities. Botany cannot be taught adequately until students have the opportunity of working with living growing plants. Plant Pathology cannot function as it should without a greenhouse.

Very respectfully submitted,

GEO. R. HILL,

Professor of Botany.

DEPARTMENT OF BUSINESS ADMINISTRATION

To the President of the College:

Sir: I have the honor to report herewith the Department of Business Administration for the past biennium.

This Department was organized as a separate Department of instruction at the beginning of the present school year. However, some of the courses now listed under Business Administration were formerly offered in other departments of the College. The action of the College in creating a separate department for training men and women in the fundamental principles of business organization and management is in keeping with a trend that is noticeable in all leading institutions of higher education throughout the United States.

The following courses are offered this year:

Vocational Courses

Economics of Business.
Business Organization.
Elementary Business Finance.

Junior College Courses

Business Organization and Management.
Advertising.
Salesmanship.
Insurance.

It is planned to offer a number of additional courses as the work of the Department develops and need therefore arises. These will include Business Statistics, Business Finance, Budget Making, Credits and Collections, and Scientific Management.

The United States Bureau of Education is planning to make a nation-wide survey to determine as nearly as may be the kind of college training men and women should have to fit them for places of responsibility in the modern business world. This Institution should co-operate in every way possible to further this undertaking.

It is difficult to estimate at this time what the needs of this Department will be during the coming biennium. The most urgent present need is a small appropriation to secure commercial maps, charts and other small equipment to be used in the class room. As the work of the Depart-

ment expands, part or all of the time of an additional instructor will be required.

Respectfully submitted,

W. L. WANLASS,

Professor of Business Administration.

DEPARTMENT OF CHEMISTRY

To the President of the College:

Sir: I have the honor to report herewith the Department of Chemistry for the last biennium.

It is a real satisfaction to note the amount of interest shown by the students in the courses offered in Chemistry. An effort is being made to apply the courses so far as possible to the practical needs of the students.

At the beginning of the summer quarter of the year 1918-19, there was a change in personnel of the Department of Chemistry. The fall, winter and spring terms were in charge of Prof. J. C. Thomas. The work in the summer quarter was under the direction of Prof. R. L. Hill. During this school year there were approximately 123 regular students registered in Chemistry. This is exclusive of the students registered in the S. A. T. C.

During the year 1919 to 1920 there were 296 registrations in the Chemistry Department. These were distributed as follows:

Inorganic Chemistry	195
Organic Chemistry	64
Qualitative Analysis	14
Quantitative Analysis	14
Industrial Chemistry	4
Advanced Quantitative.....	3

In order to properly care for this large enrollment it was necessary to assign some inorganic students to the organic laboratory. This necessitated having organic, inorganic and qualitative students in the same laboratory, which is not conducive to the best work on the part of the more advanced students. Because of the crowded condition of the laboratories it was necessary to take the Quantitative students into the research laboratory, which interfered with the research work.

At present writing there have been one hundred and sixty-eight registrations in the three sections of Inorganic, one of Organic and one of Agricultural Organic Chemistry taught by Prof. R. L. Hill. These courses all continue through the winter term. At the beginning of the winter term, the courses taught by Prof. Hirst will commence. This will add two sections of Inorganic, one of Organic, Qualitative and Quantitative Analysis to the present en-

rollment. It is therefore possible that the maximum present laboratory capacity will be exceeded this year.

It is recommended that two additional desk sections be purchased for the Inorganic laboratory. Also that another laboratory and weighing room be provided for the Quantitative students.

The Department is badly in need of an office for instructors and assistants. It is therefore recommended that a corner of the Organic laboratory be partitioned off and converted into an office.

To render adequate laboratory assistance the services of one full-time instructor and three part-time assistants and a store-room man would be required. Recommendation is hereby made that an allowance be made on next year's budget for this assistance.

Samples of various materials are continually sent in to the Chemistry Department for analysis and at present no funds are provided for this type of work. Some provision should be made for analytical work of this character, either in connection with the Chemistry Department or the Experiment Station.

Respectfully submitted.

REUBEN L. HILL.

Professor of Chemistry.

DEPARTMENT OF DAIRY HUSBANDRY

To the President of the College:

Sir: I have the honor to report herewith the Department of Dairy Husbandry for the past biennium.

Course	1918-19				1919-20			Instructor
	1	2	3	4	1	2	3	
Dairy 1.....					17			Geo. B. Caine
Dairy 3.....			14	8		3		Geo. B. Caine
Dairy a.....						22		Geo. B. Caine

In addition to the above, I am teaching Animal Husbandry 1, 2, 5, 6, 7, 8 and in the Spring, 1921, Animal Husbandry 9. All the Animal Husbandry work is reported by Dr. Carroll from his Department, therefore I will not duplicate it.

Dairy Production

The Dairy Department feels obliged to the state for providing buildings and equipment up to the present time.

The Department has not done so much the past year as it should have done, due to its inability to secure the right man for the manufacturing work.

The Dairy Production work is limited because most of my time is taken up teaching the Animal Husbandry work. In order to develop as it should do the Department should be relieved of some of the general Animal Husbandry work and be able to devote more time to the Dairy work. There are several production courses that should be given in order to make a Department. As it is now we are teaching only one real dairy production course, along with many Animal Husbandry courses.

The Experiment Station has shown some interest in the Dairy Department the last year but more work along experimental lines will have to be done in order to make the best development.

The official testing of cows over the state that is supervised through the Experiment Station should be part of the Dairy Department rather than the Animal Husbandry

Department. This work should have more stimulus until it requires a full time man to handle it. There are enough pure bred herds in the state at present to warrant a great deal more work along that line.

In order for us to have some dairy products on hand to use in the manufacturing department we should let our herds grow to about the capacity of the barn. This would make it possible for us to furnish the cafeteria with milk, make some cheese or ice cream and occasionally butter. Good cows can be made to pay their way under our conditions.

The Holstein herd is developing well enough but the Jerseys need considerable stimulus. We have no herd sire at present so that of course must have first consideration.

Official testing of the College herd is work that must be taken up in the near future. We have some very good cows and will have to put the extra energy on them in order to get them before the breeders of the state.

The office equipment for the Production and Manufacturing Department is inadequate at present. Our needs require the following:

2 filing cabinets.....	\$ 150.00
1 office table	40.00

The following animals should be purchased for the Department to enable us to properly carry on our work:

1 Jersey bull	\$ 500.00
3 Jersey cows	1,200.00

During the past year we have sold several thousand dollars worth of dairy cattle and have on hand at present \$1500.00 worth of bulls which we hope to sell in the near future.

At the Cache County fair in September 1920, we exhibited four of the College Holsteins. We won senior and grand champion with a cow and junior and grand champion with a bull. We should have shown three animals at the State Fair but conditions were not favorable. Showing will have to be done occasionally in order for us to keep before the breeders of the State.

Dairy Manufacturing Department

The most important need in the Manufacturing Department is a full-time college trained man. Last winter with

Mr. Christiansen we got along fairly well. We expect to do more this year than last but we can not do nearly all that should be done in such a department. The operation this year will afford the students splendid laboratory training as well as some commercial training, but with a college man several more courses could be taught and more laboratory work be given.

The equipment for the manufacturing room is practically complete and can operate for butter making with what is on hand at present. For other lines of work, however, a few more pieces are necessary.

1	Cheese press	\$ 65.00
1	Ice cream machine	350.00
1	Electric motor for ice cream machine....	40.00

Respectfully submitted,

GEORGE B. CAINE,

Head of Department of Dairy Husbandry.

DEPARTMENT OF ACCOUNTING AND BUSINESS PRACTICE, ETC.

To the President of the College:

Sir: The Departments of Accounting and Business Practice, Markets, Business Administration, and History, have been reported by the heads of these departments. The remaining departments in the School of Commerce and Business Administration, viz, Economics, Sociology, Finance and Banking, and Political Science, have been covered in the general report of the school.

Nothing need be said here except that the work has enlarged to such proportions that additional teaching help must be had. The number of students in these departments has greatly increased, while the number on the teaching staff has actually declined.

Respectfully submitted,

GEORGE B. HENDRICKS,

Head of Department of
Economics, Sociology, Etc.

DEPARTMENT OF ENGLISH

To the President of the College:

Sir: I have the honor to report herewith the Department of English for the past biennium.

During the next biennium the Department of English should be materially strengthened and built upon if it is to meet the needs of the Institution and the State.

To begin with, high grade work in English demands a well stocked library. A course in literature presupposes wide reading. It cannot be confined to a class text book, obviously. On the contrary, many books are read, ranging in number from ten in the elementary classes to thirty or forty in the advanced ones. If this reading is to be done, the books must be available. This means one of two things: The student must buy them himself or the library must do it. At the present time neither is doing it. The student rightly feels that he cannot afford to spend forty or fifty dollars for one course, and the librarian says, truthfully, that she hasn't been given the funds to meet the needs. Consequently this situation prevails in our courses: fifty students are assigned the reading of certain books necessary for the courses. They trouble one another in their effort to get hold of the two or three copies in the library. Only a few succeed. The preparation of the rest of the class goes by default.

That is the situation. It has been brought to the attention of the President in previous biennial reports and it is now reaffirmed as a standing difficulty that should be met for the sake of efficient thorough college work in our classes. In considering the needs of the next biennium and the money necessary to meet them, this condition should be borne prominently in mind. Fifteen hundred, better two thousand, dollars should be invested in the literary side of the College Library without further delay. It should be remembered that the library is the laboratory of the students in English, and further that all our students are students of English.

It has likewise been suggested in previous reports that it might be well to segregate the literary part of the library, using the Larsen collection as a center, in a special room. This room should be made especially artistic in picture and design in order to render a proper atmosphere or setting for the contents of the room. It would thus become a center

of culture. It would help us emphasize the side of education and life that is slighted in institutions such as this. Such silent influences often do more than much hammering in the class room.

In this connection I wish to join with the Department of Public Speaking in urging the construction of a little theater, upon which need Professor Huntsman will no doubt enlarge.

Equally urgent, more so in fact, is the enlarging of the English faculty. There are three in the Department now, each with a full schedule of teaching. No one can take on added courses and yet we must add new ones. At present the junior college courses are too few in number. We tell students of Freshman and Sophomore standing that the Senior courses are not open to them, as they should not be, but at the same time the Junior courses are so few that often it is utterly impossible for the under-classman to fit them into his schedule. Consequently he must either be admitted into the advanced courses thereby lowering their standard for the upper-classman, or go without English entirely. This is an unfortunate dilemma. Our upper classes must be safe-guarded and at the same time, we must make it possible for the under-classman to get some English. It is almost a tragedy for a Freshman or Sophomore to be denied the opportunity of English study.

Another instructor added to the present teaching force would enable us to solve this problem. This seems to be a need that cannot well be side-tracked without great loss to the student body. Not less than twenty-two hundred dollars should be set aside for the procuring of a trained man to take on this work.

It should be remembered, too, that in addition to the above teaching force, the Department is counting on having during the coming biennium, as much of Miss Kay's time as we are getting now, and also of being permitted to employ an extra man to take on the overflow of the winter quarter. Seven or eight hundred dollars should be provided for him. He will have not less than twelve hours of work, most of which is composition. We employed such a man last year during the winter term and hereby request the same privilege this year. It looks as if it will be an annual request and should be remembered by the administration.

Attention should be called to the fact, also, that the English faculty is underpaid. Professor Vickers came here this year from the L. D. S. at a financial sacrifice. Professor Kyle, who has given fifteen years of telling service to the U. A. C., is paid less than many high school instruc-

tors who have no summer school responsibility. This is not right. The Institution's budget should plan to remedy such injustices.

Finally the State, our constituency, needs help in books for the home, the building up and use of home libraries and fireside reading. This opens up a big field which I wish only to suggest at this time. Some day we should meet this demand. Shall we leave it to a future budget in order that our more immediate conditions, as suggested, may be improved?

In accord with your request, I respectfully submit the aforementioned conditions for your consideration in the making up of the Institution's budget. They are, I believe, the outstanding needs of the Department of English for the next biennium.

Respectfully submitted,

N. ALVIN PEDERSEN,

Professor of English.

DEPARTMENT OF FARM MANAGEMENT

To the President of the College:

Sir: I have the honor to report herewith the Department of Farm Management for the past biennium.

In the school year 1918-19 but one course was given in the Department of Farm Management. This was because those in charge of the work were so occupied with other College and Station work that they could not give the courses demanded; nor did they have the time to devote to experiments in Farm Management and Farm Economics.

In September, 1919, a head of the Department of Farm Management was employed to devote half his time to College work and half to Experiment Station work, thus devoting his full time to Farm Management. This made it possible for the number of College courses in Farm Management to be increased to meet the demand and Experiment Station investigations to be taken up. It is a pleasure to submit this report of the work done since 1918 in this Department.

Table 1 gives the courses taught and the number of students in each course. All are five-hour courses. In spite of the fact that the courses are new, the attendance has been satisfactory.

Table 1. Farm Management courses given and number of students in each.

Year	Courses	Quarter Given	No. of Students
1918-19	Business Aspects of Farming.....	Fall	40
1919-20	Farm Records and Accounts.....	Fall	9
	Vocational Course in Farm Organization and Farm Management	Winter	42
	Senior College Course in Choosing, Buying, Planning, Organizing and Managing a Farm.....	Winter	43
	Types of Farming in Utah, United States and Foreign Countries and Factors Affecting Them.....	Spring	7
	Research in Farm Management and Farm Economics	Fall	2
		Winter	
		Spring	15
1920-21	Farm Records and Accounts.....	Fall,	
	Research in Farm Management and Farm Economics	Fall	3
		Winter	
		Spring	

In addition to the teaching of these courses the investigational projects in Farm Management and Farm Eco-

nomics, that have been reported to the Director of the Experiment Station, have been carried forward as far as possible with the limited funds available. Considerable data have been gathered and are being put together for publication.

Economies in the management of Utah farms would save the farmers of the State many thousands of dollars. No problems seem more important at present than those of Farm Management and Farm Economics.

There is a great demand for additional courses in this Department, and as soon as funds are available an assistant should be employed in order that the work may be given.

An extension specialist in Farm Management should be employed to teach the farmers of the State the principles and facts of economic farm management. Money for agricultural extension work could be spent in no more directly remunerative enterprise than this. Such a specialist should be appointed in the immediate future and maintained in the position thereafter.

Respectfully submitted,

E. B. BROSSARD,

Head of Department of Farm Management and In Charge
Farm Management Investigations of Experiment Station.

DEPARTMENT OF FARM MECHANICS

To the President of the College:

Sir: I have the honor to submit herewith report of the Department of Farm Mechanics and Automobile Work. The following table is to show the enrollment and classes taught during the years 1918-19, 1919-20 up to August 28, 1920.

1918-1919

Courses	Fall 1918	Winter 1918-1919	Spring 1919	Summer 1919
Farm Motors		44		
Farm Mechanics—For Smith-Hughes work.....				7
Farm Mechanics			17	
Farm Machinery		16	15	
Auto and Tractor Repair.....		29		

1919-1920

	1918	1919-1920	1920	1920
Farm Motors	68	95	25	
Farm Machinery 2.....	22	26		
Auto Repairing a.....		170	31	15
Auto Repairing b.....			44	4
Auto Repairing c.....			24	4
Auto Repairing i.....		31	33	7
Auto Repairing w.....		13	9	
Short Tractor Course (2 weeks).....		150		

The Farm Motors course is a concentrated study of the Gasoline Engine and its application to the automobile, tractor and truck, also the operation and maintenance of the stationery engine, and the fundamentals of the steam engine.

Auto Repairing A is a study of the design and construction of modern automotive equipment.

Auto Repairing B is a course specializing in the construction, care and repair of the storage battery.

Auto Repairing C is a course in advanced auto repair work, arranging to qualify men for positions in garages as general repair men and foremen.

Auto Repairing I is a special course in automobile-starting, lighting, and ignition systems, and will qualify men for position in electrical repair shops and service stations.

Auto Repairing W is a course that permits men to spe-

cialize in the repair and welding by the Oxy-Acetylene process.

During the winter quarter the short tractor course was given for the benefit of farmers who were unable to leave their farms and stock for a longer period of time, yet were desirous of obtaining the fundamental principles of the operation and care of their equipment. For this course we have been able to secure the services of field men representing various manufacturing concerns. It will be noted that during the fall quarter no auto repairing was given, this due to the fact that we are installing new equipment and making the necessary changes in the laboratory.

On account of the very rapid growth of the automobile industry it has been necessary to equip and prepare to give more work along these lines than has been customary in years past. In order to take care of the very rapid increase of enrollment in this Department it has been found necessary to purchase some very expensive equipment which includes a complete Oxy-Acetylene Welding Plant, a small air compressor, two aviation engines and a complete automobile tool room equipment, yet the Department at the present time is inadequately equipped to take care of the rapidly increasing enrollment.

The Department is also in need of some of the modern farm machinery and farm appliances that are now being used, in order that this branch of the work may be taught efficiently. In the past much has been accomplished in the school by the use of machinery loaned to the College by dealers and manufacturers, and at present this plan is carried out as far as it is practical to do so. Considerable difficulty has arisen through breakage and damage and quite a number of the firms have refused to loan equipment any longer. This condition brings about a serious difficulty, that of the Department not owning enough machinery to enable us to make the courses as extensive as they should be.

It is also imperative that some plan be perfected by which some of the teaching staff will have an opportunity to study various undeveloped phases of the work and make an extensive study of the field problems in order that we may place in the hands of the County Agents much information that is constantly sought for by the farmers throughout the State.

Respectfully submitted,

A. H. POWELL,

Head of Department of Farm and Auto Mechanics.

DEPARTMENT OF FOODS AND DIETETICS

To the President of the College:

Sir: I have the honor to submit herewith a report of the Department of Foods and Dietetics for the biennium 1919-20 and include what I regard as helpful suggestions for the coming biennium.

Enrollment in Foods Department.

Courses		Number of Students	
Vocational:	Credit	1919-20	1920-21
Foods a: Food for the family..	9 hours	25	2 applicants in fall quarter advised to register for winter course
College:			34
Foods 2: Food Economics	12 hours	30	
Foods 4: Dietetics	10 hours	6	12 (Registrations not complete)
Foods 5: Food Engineering.....	3 hours. Should be increased to 4 hours	4	15
Foods 3: Special Diets	3 hours	4	2 (Registrations not complete)
Foods 10: Special Problems	Determined by nature and amount of work		1
	Total.....	25 vocational 44 college	64 to date. All college, unless enough for Foods a class in winter

These figures, unaffected by coming registrations within the school year, show a material increase in the number of students seeking Foods work of college grade.

Status of Courses.

The Foods courses in their nature and content may now safely be regarded as stabilized and standardized. Maintenance of this status depends upon:

1. Strict adherence to prerequisites practically as they now exist, making possible differentiation between grade of Foods work given to beginning College students and to those in upper high school classes.
2. An instructional staff thoroughly trained in Home Economics, of strong executive as well as scholastic ability, sincere and consistent in their efforts to maintain high standards, and richly endowed with openness of mind and human sympathy.
3. Maintenance of adequate equipment.

Policy in Conducting Work.

In the first year of this biennium organization and the Department, in the first year of this biennium, had a personal share in each course taught and came into classroom contact with most of the students enrolled, both Vocational and College; this second year the Head comes in contact with all College students in connection with presentation of College courses, and the Instructor of the Department is given responsibility for conduct of the vocational courses, plan for which is already organized. This latter arrangement is preferred both by the Head and the Instructor in the Department.

Staff and Assistance.

In the first year of this biennium organizations and conduct of the courses enumerated above, required the maximum teaching load to be carried both by the one full-time staff member and the one who gave two-thirds of her time to the Foods Department work. The current College quarter's work permits both full-time members of the Foods staff to carry but a normal load, but the following quarters will bring reversion to the maximum. With either increased enrollment or addition of any courses the teaching staff will have to be increased.

The services of the building housekeeper, given in major part at the present time to the Department of Foods and

Dietetics, saves employment of a higher salaried employee to do the necessary work that is her responsibility. Her services should be continued.

We anticipate that services of a third to half-time stenographer will be needed during the coming biennium, as is the case in the present one, to do the clerical work required by the Department of Foods and Dietetics, and Textiles and Clothing, and part of such work of the Department of Household Administration.

Facilities for Work.

Distinct advantage in the conduct of both instructional and administrative work of the Department has resulted from several minor additions to laboratory equipment, as cupboards and student book racks, and from fitting up Rooms 26 and 28 (formerly Chemistry laboratory rooms) as lecture rooms, and student uniform locker and dressing room, respectively. The storage room constructed in the northwest corner of the basement for use by our departmental institutional kitchen proves much more satisfactory for its purpose than the northeast corner room formerly used. The present storage place has light and ventilation, but is sorely in need of lower temperature. This unsatisfactory temperature condition could be remedied with comparatively little expense. It should be done in order to harmonize the principles taught with the practices of the Department, as well as to prevent spoilage of food materials kept there.

Provisions for fuel in the foods laboratories falls far short of being adequate. In Room 17 no student has an individual gas supply, whereas each one should have. The gas plant is entirely out of working order and is unsatisfactory when it does work. Connection of the Woman's Building with the gas plant that supplies other buildings satisfactorily should be made.

The electric wiring within the Woman's Building is inadequate to carry the load of even two-thirds the number of electric hot-plates needed in our class work. Our new hot-plates are in themselves good, thus indicating that the real cause of our difficulty with fuel in connection with class work lies elsewhere. The situation is responsible for much inconvenience and annoyance in our work, is a source of expense, it prevents best results, and approaches the intolerable among conditions that otherwise conduce to good work. It is ardently hoped that at least one of the Foods laboratories will be adequately equipped very soon with fuel.

In addition to the Foods Department work the Head of the Department, together with the Head of Textiles and Clothing Department, is organizing and conducting a new Household Administration course—Personal Accounts—in which 38 students, three-fourths of whom are Home Economics Freshmen, are registered. The course is most promising.

Respectfully submitted,

JESSIE WHITACRE,

Professor of Foods and Dietetics.

DEPARTMENT OF GEOLOGY

To the President of the College:

Sir: I have the honor to report herewith the Department of Geology for the last biennium.

During the school year of 1918-19 I gave the larger portion of my time as Acting Director of the Extension Division and therefore the Department of Geology was given less attention than usual. One assistant was hired to help with the teaching as well as part of my own time. The following courses were given:

- Geology 2—General Geology, 2 sections.
- Geology 3—Economic Geology, 1 section.
- Geology 4—Minerology, 1 section.

A leave of absence was granted for the summer quarter and fall quarter of 1919, the time being devoted to the State Geology work for the valuation of the non-metalliferous lands for taxation purposes.

During the winter and spring quarters of 1919-20 courses were given as follows:

- Geology a—Physiography.
- Geology 2—General Geology.
- Geology 3—Economical Geology.
- Geology 5—Ground Water.
- Geology 11—Agricultural Geology.

Leave of absence was granted for the summer quarter of 1920, the time being again spent in the State's Geology field work.

Considerable time is also given to the study of underground water throughout the State.

Because of lack of help the arrangement and display of museum and display material has been neglected and the Department should have one assistant next year to carry on the work most efficiently.

Much good material has been collected during the past two years and some of the mining companies have made valuable donations. Among those which should be especially mentioned are the Chief Consolidated Mining Company, which gave to the Department a complete collection of ores representing the Tintic District, and the American

Fuel Company, which donated a large fossil track of ancient Saurian from the coal fields.

The Geology laboratory has recently been moved from the basement to good quarters on the second floor and the Department now has ample room for the next biennium.

For additional equipment and supplies the Department will need approximately \$528 for the next two years.

Respectfully submitted,

WILLIAM PETERSON,

Professor of Geology.

DEPARTMENT OF HISTORY

To the President of the College:

Sir: I have the honor to submit herewith the report of the History Department for the past biennium.

Mr. Robinson has given part of his time and the Head of the Department his full time to the work of the Department. This arrangement will be sufficient for the coming year.

The following courses were taught, and the number registered for each course is appended:

For the year 1918-19—

Course—	No. 1st Quarter	No. 2nd Quarter	No. 3rd Quarter
Modern European History.....	320	58	65
History of England	8		4
History of Civilization (for vocational students)	6	13	
Western U. S. History.....		8	9
U. S. History	8	7	4
History of Democracy		15	
Political Science		4	3
Total Registered	342	105	85

For the year 1919-20—

Modern European History.....	25	21	42
English History	22	16	17
History of Civilization.....		18	10
Western U. S. History	31		36
U. S. Const. History	7	8	
History of World Politics	28	32	28
History of Democracy		10	7
Government	19	33	43
Total Registered	132	138	183

For the Summer Quarter 1920—

	1st Term	2nd Term
Modern European History	15	22
Government	21	9
	<hr/>	<hr/>
Total Registered	36	31

The great need of the Department is a more liberal appropriation for library books.

Respectfully submitted,

F. D. DAINES,

Head of History Department.

DEPARTMENT OF HORTICULTURE

To the President of the College:

Sir: I have the honor to submit herewith a report of the Department of Horticulture for the last biennium and an estimate of the needs of the Department for the next two years.

**Courses Given and the Registration of Students and
Names of Instructors for Each Course for the
School Years 1918-19, 1919-20, and for
the Fall Quarter of 1920-21.**

Course—	No. Students Registered	Instructor
1918-19		
Fall Quarter		
Horticulture 1-A	4	M. C. Merrill
Winter Quarter		
Horticulture B	3	T. H. Abell
Horticulture 1-A	4	M. C. Merrill
Horticulture 14	3	M. C. Merrill
Spring Quarter		
Horticulture 1-C	1	M. C. Merrill
Horticulture 4	2	T. H. Abell
Horticulture 8	1	T. H. Abell
Horticulture 10	2	T. H. Abell
Horticulture 1	7	M. C. Merrill
Total	<hr/> 27	

Course—	No. Students Registered	Instructor
1919-20		
Fall Quarter		
Horticulture A	6	M. C. Merrill
Horticulture 1-A	9	M. C. Merrill
Horticulture 2	6	M. C. Merrill
Horticulture 5	7	T. H. Abell
Winter Quarter		
Horticulture B	6	T. H. Abell
Horticulture 1-B	9	M. C. Merrill and T. H. Abell
Horticulture 3	3	T. H. Abell
Horticulture 14	4	M. C. Merrill
Spring Quarter		
Horticulture C	12	T. H. Abell
Horticulture 1-C	9	T. H. Abell
Horticulture 4	2	T. H. Abell
Horticulture 7	8	M. C. Merrill
Horticulture 10	2	T. H. Abell
Horticulture 1	6	M. C. Merrill
Total	89	

It was decided not to give Horticulture 3, 4 and 10.

Course—	No. Students Registered	Instructor
1920-21		
Fall Quarter		
Horticulture A	14	M. C. Merrill
Horticulture 1-A	7	M. C. Merrill
Horticulture 2	10	M. C. Merrill
Horticulture 5	2	T. H. Abell
Horticulture 8	3	T. H. Abell
Total	36	

The following is a record of the registration in the Department of Horticulture in recent years, exclusive of correspondence students:

1916-17	48
1917-18	72
1918-19	27
1919-20	89

Fall Quarter Registration.

1916	24
1917	14
1918	4
1919	28
1920	36

The year 1918-19 was low in registration in Horticulture, due to the war, the S. A. T. C., and the influenza.

Having the Departments of Horticulture and of Campus and Greenhouses combined has proven very desirable in many ways. Mr. Emil Hansen, Assistant in Horticulture, and in direct charge of the Campus and Greenhouses, has given aid during the past two years to the following towns in helping with plans of landscape designs for the beautification of church grounds, school grounds, city parks, auto camping grounds, and private homes and establishments:

Richmond
Logan
Smithfield
Brigham
Ogden
Delta
Milford
Cedar
St. George
Santa Clara
Garland
Parowan
Mount Pleasant
Payson
Preston, Idaho
Independence, Missouri.

The campus has made extensive improvements the past two years, among which are the following:

- The installation of a lighting system with fifteen standard lighting posts surmounted by large globes.
- The extension of the campus lawn area to include the large space in the quadrangle to the east of the main building.
- The building of new roads and cement walks leading to the new buildings of the quadrangle.
- The detailed improvements of the campus by the removal of unsightly, objectionable or dying trees, the planting of shrubs, and the extension of lawn areas.

Some of the outstanding needs of the Department are:

- A power sprayer so our orchards may be properly cared for.
- Equipment for a grading and packing laboratory.
- A laboratory for demonstrating and testing spraying machines, apparatus, and materials.
- A variety plantation of orchard, bush, and small fruits for class work.
- The extension of the windbreak to the north across the campus.
- The construction of additional greenhouses.
- Elimination of the present unsafe walks leading up the hill to the College buildings and substituting therefor concrete steps and landings.
- The construction of seats in our natural amphitheatre, one of the best and most picturesque in the country.
- The construction of roads and of cement walks leading to all the frequented parts of the campus.
- The removal of the gravel pile near the Plant Industry Building and the parking of the grounds about and to the rear of the Chemistry, Live-stock, and Plant Industry Buildings.
- The planting of trees and shrubs in the quadrangle.

An estimate of the funds needed for the improvements mentioned and for the instructional work of the Department the next biennium is as follows:

Materials, equipment and supplies for the regular instructional work	\$ 300.00
A power sprayer	450.00
Laboratory equipment for new laboratories.....	200.00
Trees and shrubs for planting	500.00
Completing the greenhouse, for which materials are on hand	1,000.00
Maintenance of Campus	10,000.00
Constructing walks, roads, concrete entrance in part, etc.	5,000.00
Total	<u>\$17,450.00</u>

Respectfully submitted,

M. C. MERRILL,

Head, Department of Horticulture.

DEPARTMENT OF IRRIGATION AND DRAINAGE

To the President of the College:

Sir: I have the honor to report herewith the Department of Irrigation and Drainage for the past biennium.

The Irrigation and Drainage Department offers one course for Vocational students, two for Junior College, and six for Senior College students. Three courses are given through the Correspondence-Study Department, and one special course is offered for watermasters and canal company officers, making a total of 13 regularly outlined courses. During the year 1919-1920, twelve of these courses were given to a total of 129 students, 26 of whom were in the Senior College group. Numerous applications were received for the special course offered to watermasters, but the influenza epidemic prevented the giving of the course.

The courses given in the different grades of instruction during each quarter of the last two years, together with the number of students in each course, and the instructor under whose direction the course was given, are presented in tabular form below.

Courses Given by the Department of Irrigation and Drainage

SCHOOL YEAR 1918-1919

Type and No. of Course	Name of Course	Enrollment Each Quarter			Instructor
		Fall	Winter	Spring	
Vocational:					
A	Farmers Irrigation		5		O. W. Israelsen
B	Watermasters Course				
Junior College:					
1	Irrigation and Drainage Practice		8		O. W. Israelsen
2	Hydraulics			4	O. W. Israelsen
Senior College:					
3	Design of Drainage Systems..				O. W. Israelsen
4	Design of Irrigation Sys- tems				
5	Management of Irrigation Systems				
6	Irrigation Institutions			3	
7	Seminar in Irrigation and Drainage				
8	Research				
Correspondence Department:					
1	Irrigation and Drainage Practice	7			O. W. Israelsen
2	Hydraulics				
6	Irrigation Institutions				

Summary:

Vocational	5
Junior College	12
Senior College	3
Correspondence	7
	—

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Courses Given by the Department of Irrigation and Drainage

SCHOOL YEAR 1919-1920

Type and No. of Course	Name of Course	Enrollment Each Quarter			Instructor
		Fall	Winter	Spring	
Vocational: A B	Farmers Irrigation Watermasters Course		17		Arther Fife
Junior College: 1 2	Irrigation and Drainage Practice Hydraulics	35	14	30	O. W. Israelsen & Arthur Fife 11
Senior College: 3 4 5 6 7 8	Design of Drainage Sys- tems Design of Irrigation Sys- tems Management of Irrigating Systems Irrigation Institutions Seminar in Irrigation and Drainage Research	5	1 6 2 1	11 5	O. W. Israelsen O. W. Israelsen O. W. Israelsen O. W. Israelsen O. W. Israelsen & Arthur Fife O. W. Israelsen
Correspondence Study Department: 1 2 6	Irrigation and Drainage Practice Hydraulics Irrigation Institutions	5 1 1			O. W. Israelsen O. W. Israelsen O. W. Israelsen

Summary :

Vocational	17
Junior College	79
Senior College	26
Correspondence	7

129

Despite the abnormal conditions of 1917-18 and 1918-19, caused by the war, the increase in the number of students seeking instruction in Irrigation and Drainage during the present biennium indicates a significant public awakening to the importance of scientific training as a basis for the solution of our most perplexing agricultural problems, a large percentage of which involve Irrigation or Drainage. This assertion is further confirmed by the fact that of the total number of graduates in June, 1920, a greater percentage made their major in Irrigation than in any year since 1907; and also that the number which graduated in Irrigation in 1920 is proportionately more than twice the average number that graduated in Irrigation during the years 1911 to 1919, inclusive. The work of the Irrigation graduates of the College is considered further in the latter part of the report.

Laboratory Facilities.

The Soil-and-Water-Relations laboratory, need for which was fully outlined on November 15, 1918, is now partly completed. Two sets of laboratory desks were transferred from the Agronomy laboratory to the Agricultural Engineering Building and on these 16 students can work at one time. By dividing the class in Irrigation Practice into two sections, it is possible to give all an opportunity to conduct some laboratory exercises. Laboratory facilities for giving instruction to students in Hydraulics, the need for which has been outlined in many reports heretofore, and particularly in a letter dated March 4, 1920, have not yet been developed. The need for this laboratory is becoming increasingly urgent, as will be pointed out later.

For the course in Design of Drainage Systems, advantage has been taken of field laboratory facilities made available by large areas of water-logged land near the Institution. In the spring of 1920, the class of 11 members made the necessary surveys, soil borings, and other observations to form the basis of comprehensive design of a drainage system for a 160-acre tract lying immediately west of the Oregon Short Line Depot. A blue print indicating the contours and location of various drain tile accessories is attached herein.

The materials laboratory which is needed for students in Design of Irrigation Systems is not yet available.

The Materials-Demonstration laboratory described heretofore and needed for giving instruction to farmers and to College students, is now well under way. During the last year, ten private corporations which make a business of

manufacturing equipment used in irrigation and which represent ten different states, have contributed equipment used in development of ground water, in pumping, in water measurement, etc., the value of which is approximately \$800.00. A detailed description of the equipment supplied by the various companies is on file in the Secretary's office as part of the Department inventory.

During the past year, Courses 2 and 6 concerning Hydraulics and Irrigation Institutions, respectively, have been offered through the Correspondence Department to a limited number of students, awaiting the development of a comprehensive outline as a guide in these courses. Such an outline for the work in Hydraulics has just been completed, and as opportunity affords, a similar outline will be provided for the course in Irrigation Institutions.

Plans.

It is planned during the forthcoming winter, vigorously to develop Vocational courses by providing instruction for watermasters and canal company officers. The response obtained to date, in connection with these courses, from irrigation company officials has been gratifying, and it is believed that the course may be made a significant part of the work of the Department.

Until the present school year, the course in Hydraulics has covered five hours during one quarter. At present, three hours during two quarters are given to this work. It is considered urgent that this course be strengthened, particularly with reference to laboratory work. During the past year, the Head of the Department visited twelve large universities in which courses in Hydraulics are highly developed, and found that laboratory courses almost invariably accompany the lecture work. It is also urgent that facilities be provided for making a number of class-room demonstrations. This necessitates the construction of the proposed Hydraulic laboratory at the earliest possible date.

It is planned to strengthen, so far as possible, Course 4 concerning Design of Irrigation Systems by increasing the amount of field laboratory work and by requiring students each year to visit typical irrigation structures in Utah and adjoining states.

Results of an experiment in conducting an Irrigation Seminar during the year 1919-20 were quite satisfactory, despite the fact that only two students were officially registered for the course, because most of the advanced students in Irrigation were carrying the maximum registration permitted. Twelve students attended the Irrigation seminar

each week, and eight of the number prepared excellent discussions on current irrigation problems. It is therefore planned to give considerable attention to further development of this Seminar in Irrigation and Drainage. It is also planned to give more attention than heretofore to the direction of research work by advanced students.

Needs.

Reference has so frequently been made to the need of a Hydraulic laboratory that it is unnecessary to mention this matter further, despite the fact that the need is not likely to be over-emphasized. An itemized list of the materials necessary for this laboratory, together with an estimate of cost was submitted on March 4, 1920. It was then suggested that a beginning may possibly be made with \$5,000.00. It is now urged, however, that \$5,000.00 would simply make a fair beginning and do the work properly, the original estimate of \$10,000.00, as outlined in several letters heretofore, is urgently needed.

Of equal importance to laboratory needs is the need for strengthening the staff in Irrigation and related subjects. The Institution has not only an opportunity, but great responsibility in developing leaders in irrigation activities in the West. The Professor of Irrigation Engineering of the University of California devotes almost his entire attention to teaching one basic engineering course, and this course has been greatly strengthened under his direction. This Institution should likewise detail to an engineer of a high type of training, having had field experience, the responsibility for the developing of a very strong course in Irrigation Design. The need for such courses here cannot be denied, and it is clearly impossible to make this course of the highest standard without devoting a great deal of time and attention to it. The imperative necessity for maintaining a few strong, vigorous courses in Irrigation is called to attention below in connection with a brief summary of the service being rendered in the western states by the men who have been graduated from this Institution in Engineering, with special reference to Irrigation.

Outlook.

The opportunities for service by the Irrigation Department have never been greater, nor has the outlook been brighter. Individual farmers, farm bureau locals, irrigation companies and irrigation district organizations, county commissioners, state governments, groups of states in an or-

ganized capacity, and the Federal Government; all these are now studying ways and means of increasing the area of irrigated land and of advancing irrigation interests.

Consistently to further these activities and properly to guide them by the training of leaders is one of the greatest opportunities awaiting the College. To be sure, much has already been done. From 1894 to 1915, inclusive, the College graduated 37 men whose major work was in irrigation engineering or closely allied irrigation work. Of the 34 now living, a large proportion are engaged in irrigation activity either as practicing engineers, of whom there are 15, or as engineers in the public service, in which 14 are engaged. Five are making farming their vocation. Of the 14 in the public service, three are in the Federal Department of Agriculture, one is engineer for a Federal Land Bank, one is in a State Engineer's office, one is a state water commissioner, one is a state commissioner of reclamation, two are teachers in high schools, one is director of an agricultural experiment station, and four are professors in charge of College and University departments giving work in Irrigation Engineering or closely allied irrigation subjects.

Of the 15 engaged in private engineering, one is chief engineer of a large corporation that is engaged in irrigation activity, and two are designing engineers for smaller corporations. One of the latter three has been a state engineer. Twelve of the 15, as practicing and consulting engineers, have much to do with irrigation activity.

The above facts are sufficient to show beyond doubt that the College long ago reached a high standard in its instruction relating to irrigation and that nothing but a high degree of efficiency in the present Department will maintain that standard.

However, equally important to maintaining a high standard, is the training of large numbers of irrigation men. That so few have been trained during the past is a matter of surprise and concern.

The percentage of our total graduates who were trained in irrigation ranges from 50 in 1903 to 1.1 in 1913, excepting a few years when there were no graduates in Irrigation. Dividing the graduating classes into groups beginning with 1894 and 1895 as the first group, and each succeeding 5-year period to 1920 as the remaining groups, the percentages of the total graduates who did their major work in Irrigation Engineering or allied work for the periods ending in June, 1895, 1900, 1905, 1910, 1915 and 1920, are respectively 33.3, 19.8, 9.2, 3.6 and 5.4. With but one exception there was a gradual decrease in the percentage till the period ending

June, 1915, after which there was a slight increase. In view of the fact that there are several hundred engineers in the West engaged in irrigation activity and that there is an urgent need for more, it is undoubtedly urgent that the College so develop its Agricultural Engineering, that more men will be attracted to this field. It appears that a beginning is being made. In 1920, 9.4 per cent of the total graduates were Agricultural Engineering students majoring in Irrigation. In all probability, the 1921 percentage will be significantly higher.

In the biennial report to your office under date of October 27, 1916, attention was called to the fact that "Utah men who spend practically all of their time in the study of irrigation problems, and also practical irrigators, are agreed that a large proportion of the land in the State is over-irrigated. This condition is due in large measure to lack of knowledge on the part of irrigators concerning methods which will make possible more economic use of water and of relations of water to soil. Many of the present contests of water appropriation, made at large expense to the State, would never arise if the contestants correctly understood the elements of irrigation institutions and of water measurement. Likewise much of the needless, expensive litigation now plunged into would never be initiated if the litigants were better acquainted with irrigation principles.

"The aim of this Department is to make it possible for every irrigator of the State to obtain a correct understanding of elementary irrigation and drainage principles. It hopes to accomplish this end, first, by giving one fundamental course in Irrigation to Agricultural students; second, by training specialists, who will, after leaving College, work among the irrigators of Utah and thus instruct them; third, by giving short course residence instruction to practical irrigators and men engaged in the management of irrigation enterprises, and fourth, by reaching in the field all of the irrigators possible under the direction of the Extension Division."

Since the above was written, irrigation conditions have not materially changed. Moreover, it is likely that vigorous activity on the part of this and related departments for decades will be required to accomplish desirable improvements. That such activity will repay the people of Utah many times its cost is true beyond doubt.

Respectfully submitted,

O. W. ISRAELSON,

Professor of Irrigation and Drainage.

DEPARTMENT OF MARKETING

To the President of the College:

Sir: I have the honor to report herewith the Department of Marketing for the past biennium.

It is only within the last five years that the problems of marketing and especially the marketing of agricultural products, have received anything like the attention that their importance deserves. The recent rapid rise of prices and the unprecedented "spread" of differential between the price received by the producer of agricultural products and the price paid by the consumer have stimulated a keen interest in the present systems, methods and costs of marketing. The recent establishment and rapid growth of the Federal Bureau of Markets and creation of various state agencies to study the problems of, and promote better methods in, marketing are striking evidences of the public interest in this subject. It is just as important that farmers and other producers learn the best methods of marketing as it is to learn how to produce better and larger crops and stock. Indeed, marketing is a real part of production though it is not generally so regarded. The importance of this kind of education was recognized by the College last year in creating a separate department of instruction in Marketing.

The following courses were given last year and are being given again this year:

Agricultural Commerce.
Marketing Farm Products.
Co-operation in Agriculture.

As the work develops it is planned to study marketing in its larger aspects as well as in the field of agriculture.

Respectfully submitted,

W. L. WANLASS,

Head, Department of Marketing.

DEPARTMENT OF MATHEMATICS

To the President of the College:

Sir: I have the honor to report herewith the Department of Mathematics for the past biennium.

The Department of Mathematics has never been in a more prosperous and satisfactory conditions. Present registration indicates an even greater period of growth during coming years. Tradition has been somewhat shattered in the present arrangement of courses but the results seem to justify the means employed. The object of the present arrangement is to offer at least one course that is within the reach of the average Freshman. A course that doesn't require too much of his time and yet gives him those basic principles that he is sure to need during the remainder of his school work, regardless of the school in which he does his major work.

The writer believes that, if the first or freshman course in any department is made too exacting and rigid, but few beginners will attempt it and the result will be that only a very few will continue on in the more advanced courses of that department. To show the working out of this, the writer points with pride to the fact that during the present year he has a class of 23 students in Mathematics 7 (analytics and calculus), while in all of the years that have passed from 3 to 7 students has been the rule. During the school year 1919-20 there were 187 students enrolled in the various courses offered by the department. This is exclusive of approximately 100 students enrolled in the courses in Arithmetic and Algebra, etc., offered primarily for soldiers taking training under the direction of the Federal Rehabilitation Board.

The Mathematics Department is greatly indebted to Dr. William Gardner of the Physics Department, and Prof. William Peterson of the Geology Department for the assistance rendered during the heavy registration of last year. Dr. Gardner taught a class of 61 students in Mathematics 5 daily during the fall quarter, and Prof. Peterson taught a class of 16 students in Mathematics 10 daily during the spring quarter. The writer acknowledges with gratitude the services rendered by Dr. Gardner and Mr. M. D. Thomas and others who so kindly and ably carried on the work of the Department during the writer's illness which occurred during January and February of 1920. The

head of the Mathematics Department serves also as Acting Director of the School of Home Economics, as a Schedule Committee, and as a Committee on Graduation.

If the present heavy registration in the Department continues, and there is every reason to believe that it will, we shall need the services of an instructor to work full time next year.

Respectfully submitted,

A. H. SAXER,

Professor of Mathematics.

DEPARTMENT OF FORGING

To the President of the College:

Sir: I have the honor to report herewith the Department of Forging for the past biennium.

The work of the Forging Department the last two years has been very different from previous years. I take it that the greatest work that the Department has ever done was training Soldier Mechanics for the U. S. Army. It is a pleasure for me to report that we were prepared for this work with but a few minor changes, and that we performed our task well.

Last year was the Forging Department's busiest year. During the winter quarter the registration reached 150 students, which is about a 50 per cent increase over the year previous to the soldier training work.

It is still our policy to change the work to suit the varying conditions. Last year a special course was outlined for automobile and tractor students. It was a success, and we feel that the change was worth while.

The shop is fairly well equipped for present needs, but I have felt for some time, and in contemplating the future, I see the need of some special furnaces for heat treatment of the various steels which we find in the automobile, tractor and farm implements. A little work has been done in this direction but to continue it will mean more equipment.

Respectfully yours,

AARON NEWHEY,

Associate Professor of Forging.

DEPARTMENT OF MACHINE WORK

To the President of the College:

Sir: I have the honor to report herewith the Department of Machine Work for the past biennium.

Enrollment of Classes

	1918-19
Fall Quarter Machine Work	34
Winter Quarter Machine Work	55
Spring Quarter Machine Work	11
	1919-20
Fall Quarter Machine Work, 1-2-3.....	79
Winter Quarter Machine Work, 1-2-3.....	142
Spring Quarter Machine Work, 4-5.....	31
Summer Quarter Machine Work, c.....	18

The enrollment of classes for the school year of 1918-19 is given to show how the demand on the Department has increased. The enrollment during the fall quarter of 1918 consisted of men of the S. A. T. C.

Nearly all of the students in the Machine Shop Department are men specializing in automobile work, which creates a demand for more lathe work and the operation of lathe attachments.

During the winter the following machine tools were obtained from the Government and installed: four 16-inch lathes; one turret lathe; two drill presses; one power hack saw; two grinding wheel stands; one gap lathe.

This equipment has been of great help to the Department, yet this installation has necessitated the crowding of machines so close together as to bring about a condition that is somewhat unsafe.

Before installing the new machines purchased from the Government there were only seven lathes in the Department available for this work. This brought about a condition which prevented us from giving the amount of lathe work the students were desirous of obtaining.

At present the Department has an insufficient number of lathes and no lathe attachments. Due to this condition the work now being given is not as complete as we should like it to be.

Respectfully submitted,

A. H. POWELL,

Asst. Professor of Farm Mechanics and Machine Work.

DEPARTMENT OF MECHANICAL DRAWING

To the President of the College:

Sir: I have the honor to report herewith the Department of Mechanical Drawing for the past biennium.

	1918-19		1919-20
Drawing 1—a. b. c.....	12		2
Agricultural Drawing 1a.....			
Agricultural Drawing 1b.....	3		3
Drawing 2—a, b, c.....			
Drawing for Builders 1a.....	5	2a	6
Drawing for Builders 1b.....	6	2b	10
		2c	9
Drawing 3—a, b, c.....			
Mechanical Drawing for draftsmen and engi- neers—3a	4	3a	68
		3b	8
		3c	3
Drawing 4—a, b, c.....			
Architectural Drawing		4a	9
		4b	4
Drawing 5.....			
Engineering Drawing			5
Drawing 6			
Lettering			
Drawing 7			
Descriptive Geometry			
Summer School			7

At the present time there is not enough equipment such as desks and drawing instruments to take care of all students who desire drawing. This year we have had to limit the number of students to 50 for each term. With the addition of a table with 50 drawers for lockers, 100 students may take drawing each term. Another 50 sets of instruments should be provided.

Mechanical drawing is basic work for all students in Engineering, Mechanic work, Roads, Carpentry and Build-

ing. Most of the students in these courses take drawing. It will be necessary to employ a full-time instructor. At the present there is more work than can be properly done by the present instructional force.

The financial needs of the Department for the year beginning July 1, 1921, are as follows:

Instructor, full time	\$2,400.00
Drawing boards, instruments, tables, etc.	600.00
Supplies—Blueprint paper, trac- ing cloth, paper, etc.....	200.00
	<hr/>
	\$3,200.00

Respectfully submitted,

J. S. POWELL,

Professor of Fine Art and Mechanical Drawing.

DEPARTMENT OF WOODWORK AND HOUSEBUILDING

To the President of the College:

Sir: I have the honor to submit herewith report of the Department of Woodwork and Housebuilding for the past biennium.

In 1918-19 very little was done by way of class work on account of the influenza epidemic.

During 1919-20 our enrollment numbered 230, including summer school students. Summer school continued throughout the entire quarter during the last two years. The enrollment of last year's summer school exceeded by more than 100 per cent any previous summer school enrollment of this department, and the enrollment for the entire year was also the greatest in our history. From present indications this year bids fair to set a new record.

Our work with the Federal students has been pleasant and is proving entirely satisfactory. Their presence with us is adding prestige to our department and will be a means of making our school favorably known in many new localities.

The equipment of this department is far below standard.

Most of the bench vises are worn out, and no wonder; they were in the fire in 1905 when the shops burned down. Our moulding and combination planes also are worn out, aside from being out of date. Occasionally a student brings some up-to-date tool of his own, which the shop lacks.

Our mortiser, patched up two years ago, is now irreparable and dangerous to use. The promised tenoning machine is still expected.

Another improvement that we are still looking for is heat in the stock room. The chill and dampness there is very detrimental to our finished products in the way of shrinkage.

With standard equipment and better stock we shall steadily grow, for having done so in spite of our facilities how much more so with better ones.

Buying our stock on the local market and in small quantities is not only expensive but gives us inferior quality. We should buy our supplies preferably in the fields of production, which would insure better prices and higher quality.

Respectfully submitted,

A. J. HANSEN,

Department of Woodwork and Housebuilding.

DEPARTMENT OF MILITARY SCIENCE AND TACTICS

To the President of the College:

Sir: I have the honor to submit herewith a report of the Department of Military Science and Tactics during the biennium 1919-20, but more especially on the scholastic year 1919-20, due to my direct connection with the College during this period.

The beginning of the school year found two units of the Reserve Officers Training Corps, Infantry and Coast Artillery, authorized for this institution under authority of the Act of Congress of January 3, 1916. The Infantry Unit had been installed a year previous, but on account of adjusting the College to war conditions and productions in the form of Student Army Training Corps and the epidemic of influenza that followed, together with the natural reaction towards all things military immediately after the war, this unit was woefully under-developed. The Coast Artillery Corps Unit had been authorized during the summer of 1919 and was installed at the beginning of the school year. Thus it is apparent that the first actual effort to make the aim of the leaders in this new military thought effectual, was done during this year.

It was necessary to establish a program of propaganda, and a system of appealing to the patriotism and sense of duty of the student body in order to create enthusiasm, to overcome the opposition to all things military, a natural consequence of the war, and to stir up interest and make the work productive. This as done and to a very satisfactory degree accomplished our object; in fact, the "esprit de corps" of the Cadet Battalion had reached such a high standard by the end of the year that we were highly complimented by the War Department Annual Inspector, upon it and the dependent results.

Men, upon registration, elected or were assigned to the Coast Artillery or Infantry Unit, many of whom were immediately afterwards transferred to the Motor Transport Unit which had by this time been authorized, in response to our efforts to obtain same to care for the many men interested in Automotive Engineering. With three appropriate Units operating, a variety of R. O. T. C. training suitable to the desires of all cadets was provided. These Units were developed during the year along the lines and courses of instruction laid down by the War Department.

The regulations providing for this institution contemplate practically the same work for the members of the different Units during their first two years of R. O. T. C. service, one hour per week during the second year is devoted to specializing in the work peculiar to the unit elected. In the Junior and Senior years or while pursuing the advanced course, if the cadet has so elected and has been granted permission, three hours per week are devoted to specialization in the work of the unit elected.

The maximum number of students enrolled in this Department during the year was 293, of whom 276 were classified in the basic course or the required years of Military Training and 17 in the advanced course or the elective years of training. Of those registered in the advance course four became eligible during the year for the Government allowance of commutation of rations provided for by the following legislation:

Admission to Advanced Course

When any member of the R. O. T. C. has completed two academic years of service in the Senior Division or has taken a course in a Junior Division substantially equivalent to the basic course of the Senior Division and has been selected by the President of the Institution and the Professor of Military Science and Tactics as qualified for further training he may be admitted to the advanced course of the Senior Division.

Any member of the Senior Division who has been admitted to the Advanced course, and who executed the following written agreement will be entitled, while not subsisted in kind to the commutation of subsistence fixed by the Secretary of War in accordance with law:

In consideration of commutation of subsistence to be furnished me in accordance with law, I hereby agree to continue in the Reserve Officers Training Corps during the remainder of my course in (not

(Institution)

to exceed two years), to devote five hours per week during such period to the military training prescribed, and to pursue the course of camp training during such period, prescribed by the Secretary of War.

Witness

This ration allowance amounted to 40 cents a day dur-

ing the year of 1919-20 and 53 cents per day during this fiscal year. The reason more members of the advanced course were not eligible for ration commutation during this year was that they had not completed two academic years' service in the Senior Division or its Junior Division equivalent and had become eligible through special permission granted on account of service in the army.

The filing of our requisition for Government clothing was delayed until about January 1, 1920, but upon arrival of same each member of the Cadet Battalion was issued upon memorandum receipts, one complete uniform, including two shirts, one pair shoes, hat, etc. This clothing is a gratuitous issue on the part of the Government and the only obligation of the student is the proper care and return of same upon his separation from school. The requisitions for Coast Artillery and Motor Transport material were not filled until near the termination of the school year, thereby interfering and retarding to a considerable extent technical instruction in those branches during the year. The property and equipment requested by said requisitions has all been received and in a general way consists of the following:

Coast Artillery

- 1—10-ton tractor
- 1—F.W.D. Mobile repair shop
- 1—8-inch howitzer
- 1—Telephones, observing instruments and various fire-control instruments.

Motor Transport Corps

- 5—3 to 5-ton trucks
- 1—1½-ton truck
- 2—¾-ton trucks
- 2—Motorcycles
- 1—5-passenger car
- 1—Mobile repair shop

Infantry

- 260—1903 and 1917 Model rifles
- 260—Complete packs
- 5—Machine guns

Intrenching tools, bayonets, ammunition, etc.

The following officers were on duty with the R. O. T. C. units during the year:

Lieut. Col. Russell P. Hartle, Inf. P. M. S. & T., during complete year.

Major R. N. Campbell, C. A. C., from Sept. 15, 1919, to Dec. 2, 1919.

First Lt. W. T. Scott, Inf., from Sept. 14, 1919, to Dec. 15, 1919.

Capt. J. A. Hoag, C. A. C., from Jan. 15, 1920, to June 1, 1920.

In addition there were approximately four enlisted men on duty with the units during the year. No Motor Transport officer was assigned to duty with the unit on account of the non-arrival of the material and the exceptional ability of the Mechanic Arts Department in caring for the technical work of the Motor Transport Unit.

The work and progression of the three units during the school year in spite of the handicaps under which we labored was extremely satisfactory. These handicaps in a general way consisted of developing embryonic units, war reaction, changing personnel, shortage of equipment, unusual severe winter and lack of interior drilling space.

The units were inspected upon three different occasions during the year by War Department Inspectors and at no time was there anything but praise offered for the apparent progression and results.

There were no graduates of the Reserve Officers Training Corps in 1919-20 on account of its recent installation and the requirements that one must have been enrolled and successfully completed four academic years of service in the Senior Division of the R. O. T. C. or its equivalent before being eligible for a Reserve Officer's commission. Within another year these requirements will be met and this Institution will join with others in providing a constant flow of Reserve Officers for the military forces of the nation.

The privilege offered by War Department regulations of attending summer camps where more intensive military and technical instruction in the different units is given was taken advantage of by seven members of the Motor Transport Unit, who attended camp at Camp Holabird, Md., and nine members of the Coast Artillery Unit attended camp at Ft. Monroe, Va. These men returned highly pleased with the results of the six weeks' work and will form a valuable nucleus for the military organization of 1920-21. Their records at the camps were highly creditable; in fact, they became the leaders in most activities, which seems a fitting climax to what had been considered a most successful year in the Military Department at this Institution.

The following letter from Major General F. W. Coe, Chief Coast Artillery, to Dr. Peterson, is an indication of the impression made by our year's work upon our Corps Chiefs.

"As the college year is about to open, I wish to take this occasion to express to you my appreciation of the work that has been accomplished by the Coast Artillery Unit of the R. O. T. C. at your College during the past year, and especially during the camp at Fort Monroe, Virginia, which I inspected on July 23, 1920. The progress of the students attending the camp in the practical work of the course, as demonstrated by the exercises I witnessed, was most impressive. Such results can only be obtained when both instructors and students are imbued with the highest motives and the honest desire to make the most of their opportunities. I was particularly gratified at observing the high character and intelligence of the young men attending the camp at Fort Monroe.

"There is no more important work that our Colleges can do in furthering the national defense than the education of the Corps of Reserve Officers; for the efficiency of an army is largely dependent upon the efficiency of its officers. In our army we want the best officer material the country affords.

"In conclusion I desire to express again my appreciation of what has been accomplished in the past and my sincere good wishes for increased success and efficiency during the coming year. I am always glad to do anything in my power to further the interests of the R. O. T. C. in general and of the Coast Artillery Units in particular."

In order that this Department's progression may be maintained and the primary object of the Reserve Officers Training Corps—that of providing systematic military training at civil educational institutions for the purpose of qualifying selected students of such institutions as Reserve Officers in the Military forces of the United States—may be completely realized, it is strongly recommended that this department be provided with an armory which will care for all of our needs and overcome practically all our handicaps.

The consolidation of Government property for better care, shelter and protection, the providing of a laboratory for experimental and research purposes, and the constant

winter demands for a suitable drill area require early compliance with this recommendation.

Respectfully submitted,

R. P. HARTLE,

Professor of Military Science and Tactics.

DEPARTMENT OF MODERN LANGUAGES

To the President of the College:

Sir: I have the honor to report herewith the Department of Modern Languages for the past biennium. At the opening of the College year in 1919 the Department was giving eleven courses with a total registration of 100 students. This year the number of courses is ten and the registration is 95. The Department also maintains a French Club whose meetings have an attendance varying from 20 to 80. Besides his work in the Department the head has each year an increasing amount of publicity work to do for the College and with the object of getting help, offers each year a course in journalism. He also has charge of the Community Service Bureau and the editing of the monthly Extension News for the Extension Department.

Respectfully submitted,

FRANK R. ARNOLD,

Department of Modern Languages.

DEPARTMENT OF MUSIC

To the President of the College:

Sir: I have the honor to report herewith the Department of Music for the past biennium.

At the present time the enrollment in our various courses total 289, divided as follows:

Theory	53
Choir and Glee Club.....	168
Band and Orchestra	50
Applied Music	18
<hr/>	
Total	289

This shows a considerable increase in attendance and two added courses, making 14 in all.

Our equipment is adequate and in good condition.

Respectfully submitted,

GEO. W. THATCHER,

Head of Music Department.

DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

To the President of the College:

Sir: I have the honor to submit herewith a report of the Department of Physical Education for Men, for the past biennium.

The Department as at present organized gives physical training to all the men in the Institution with the exception of those physically unfit. Every man is given a physical examination by Dr. Preston before he is allowed on the gymnasium floor.

Two years ago when physical training was made compulsory for all the male members of the student body, there was at first some resentment on the part of the students, but now there seems to be an universal approval of the policy.

During the present quarter there are 473 men in organized classes taking work in the gymnasium three times a week.

Since the adoption of the present system, handball, wrestling, boxing and swimming have become very popular.

It has been the policy of this Department to work in perfect accord with the Competitive Athletics Department for men who are out for any branch of sport under Coach Romney have, of course, been excused from gymnasium work.

Of the minor sports handball seems to be the most popular and the demand for more handball courts is apparent. I believe, though, for the present our gymnasium needs first of all equipment. Our gymnasium as a building is one of the best in the west, but we have scarcely any equipment that can be used for the students. I believe it will take about \$3,000 to properly equip the building.

The Department should next year do work for those physically unfit, and for this equipment is absolutely necessary.

Respectfully submitted,

JOSEPH R. JENSEN,

Assistant Professor of Physical Education.

DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN

To the President of the College:

Sir: I have the honor to submit herewith a report of the Department of Physical Education for Women for the past biennium.

The Department as now organized provides courses in general gymnastics, play, games, swimming, folk dancing, aesthetic and interpretive dancing and personal hygiene.

At present there appears to be no resentment toward the compulsory physical education which is scheduled for Freshmen and Sophomore students.

All students are given physical examination by Dr. Preston before beginning the floor work.

During the present quarter there are 118 Freshmen, 58 Sophomore, 44 Vocational and 28 Dancing, making a total of 248 students in the Department.

I should like to see a clinic established in our Department where those students who are physically unfit for regular work could be given remedial and therapeutic exercises and massage, specified to their particular needs.

Respectfully submitted,

OLGA CARLSON,

Instructor of Physical Education for Women.

DEPARTMENT OF PHYSICS

To the President of the College:

Sir: I have the honor to report herewith the Department of Physics for the last biennium.

The following table shows the class room and laboratory work conducted by the Department:

1918-1919

Course	Credits	Number of Students			
		Fall	Winter	Spring	Summer
General Physics	3	31	28	26	
Adv. General Physics	5	25	22	17	8
Physics 6 (Meterology).....	3			5	
Physics 11—Radio	2		2	2	
Physics 5 (Phy. Chemistry).....	3		8		
Physics 4 (Elec. & Mag.).....	3				
	—	64	60	50	8

Average number of students in classes—20.

Six hundred and sixty-two student hours.

Ninety-seven different students.

1919-1920

Gen. Physics	3	47	50	40	
Adv. Physics	5	33	53	14	10
Physics 5 (Phy. Chemistry)	3		6		
Physics 6 (Meterology).....	3			16	
Physics (Radio) 11.....	2		2	2	
Physics (Seminar) 12.....	2	7	7	7	
Physics (Elec. & Mag.) 4.....	3	9			
	—	96	98	79	10

Average students in classes—25.

One hundred and thirty-three different students.

Nine hundred and ninety student credit hours.

All the lecture work in the Department was done by the Head of the Department, Dr. West. The laboratory work was in charge of Mr. Edlefsen. Dr. Gardner and Mr. Edlefsen taught classes in the Department of Mathematics. All three of us are doing Experiment Station work. The results of the last two years' work are contained in Bulletin No. 166 and in seven articles published in the scientific

journals of the country. The Head of the Department also serves as Director of the School of General Science in addition to the usual committee work.

The laboratory and class room facilities are satisfactory, but due to the high cost of materials and the necessity of economy, the stock of equipment has depreciated materially during and since the war. A substantial increase in funds in order to make our laboratory instruction adequate and replace our depleted stock is very desirable.

Respectfully submitted,

FRANKLIN L. WEST,

Professor of Physics.

DEPARTMENT OF PHYSIOLOGY

To the President of the College:

Sir: I have the honor to report herewith the Department of Physiology for the last biennium.

The number of students registered in the department was:

1918-19	1919-20
69	106

The courses were taught during 1918 and 1919 by Dr. R. O. Porter. During the spring of 1920 Dr. Frederick, Assistant Professor Carter and myself each taught a section in Physiology. The present year the work is all being taught by Professor Carter.

The last two years have seen a rapid increase in the students who have registered for Physiology. This is due to increased attendance at the Institution and also to the fact that more students are coming each year to elect Physiology for the meeting of their Biological Science requirements. This is as it should be, for Physiology is of interest and value to the students of every school. Probably the registration in this work will be even greater during the next two years.

Provided we are granted the full-time assistant asked for in the report for the Department of Bacteriology, the present member of the Department will be able to take care of the teaching during the next biennium.

It is just as impossible to teach Physiology efficiently without laboratory equipment as it is to teach Chemistry. Therefore a class room and laboratory should be provided for the work in Physiology. With an annual appropriation of \$500 it would be possible to buy the necessary apparatus for laboratory work, and even though it may be impossible to fit out a laboratory for the next year, I strongly recommend that this amount be allotted to the Department so that necessary apparatus for classroom demonstrations can be obtained. Good classroom demonstrations would easily double the value of the work given in the course.

Respectfully submitted,

J. E. GREAVES,
Professor of Physiology.

DEPARTMENT OF PUBLIC SPEAKING

To the President of the College:

Sir: I have the honor to report herewith the Department of Public Speaking for the biennium 1919-1920.

Classes.

The classes taught with enrollment are as follows:

Extemporaneous Speaking	40
Public Speaking	8
Vocal Expression	34
Vocal Interpretation	14
Dramatic Interpretation	14
Interpretative Reading	6
<hr/>	
Total	126

Activities.

The dramatic activities and oratorical contests of the School are under the direction of the Department of Public Speaking. Each succeeding year shows an ever-increasing interest on the part of the students in these activities, showing that the value of participating in the creative activities of the School is being recognized more and more by the students to have an educational value as well as the acquisitive work of the classroom. During the year at least four plays will be presented by the students, including the annual College Play, the Freshman Class Play and plays by the Periwig Club. The Department is also co-operating with the town's people in the matter of a community pageant in celebration of the Pilgrim Tercentenary.

Needs.

The work of the Department has grown to such proportions that one instructor cannot adequately do the work. Classes of thirty and forty students should be divided in order to give the individual help necessary in this particular kind of work. There is always a demand for one or two extra classes in Public Speaking during the Winter Quarter, as this is the time when the plays are being produced and the oratorical contests held, the time of one instructor is

inadequate to meet the demands of both class work and the outside activities. I would suggest that an assistant be employed for the next school year who could assist with the Junior College class work and the coaching of plays.

The great need for the Department still remains—a suitable auditorium where the College Plays could be produced. At present we are compelled to produce our plays in the Auditorium of the local High School. We have no facilities for even carrying on the rehearsals of the plays but must hire a hall for that purpose. We have no equipment of any sort whatever for the production of plays and yet we are expected to produce at least two plays each year. If a new building is out of the question, with a relatively small expenditure, the present Auditorium could be made to serve, or a room in one of the buildings be fitted up to meet the need until something more adequate is possible.

Respectfully submitted,

SARA HUNTSMAN,

Head, Department of Public Speaking.

DEPARTMENT OF RANGE MANAGEMENT

To the President of the College:

Sir: This brief report includes the period since November, 1918, at which time work was started in the Department of Range Management.

The following courses have been taught by the writer:

Year	Quarter	Course	Enrollment
1918-19	Winter	Range Management 1	23
1919-20	Winter	Range Management a	22
1919-20	Winter	Range Management 1	3
1920	Summer	Range Management a	18
1920	Summer	Range Management 1	2

During both winter quarters the writer has also taught half of the course in Beef Cattle Management under direction of the Department of Animal Husbandry.

The writer spends half time in Experiment Station work and also investigates special problems for the Extension Division. Under direction of the latter, lectures have been given at ten special institute meetings.

The following courses of instruction are now offered by the Department:

- a Elementary Range Management
- b Elementary Forestry
- 1 Range Management
- 7 Forestry
- 8 Research

An additional college course is now being planned for students who major in Animal Husbandry.

Resident instruction in these subjects cannot be properly conducted without laboratory facilities. Whereas the College is situated in an environment offering close contact with problems of many other lines of agriculture, our native ranges are relatively distant. For other than theoretical instruction much material must be assembled in the labora-

tory for study. This will include maps, charts, pictures, instruments, samples of range equipment, and a large number of herbarium specimens of both plants and trees. Until provision is made for these the usefulness of the Department will be seriously curtailed.

State activities in range management is truly in its infancy. Since at least 90 per cent of Utah's area can never have any other agricultural use than as range land, the problem looms large. The importance of the work should insure for the Department a rapid and substantial growth.

Respectfully submitted,

R. J. BECRAFT,

Assistant Professor of Range Management.

DEPARTMENT OF TEXTILES AND CLOTHING

To the President of the College:

Sir: I have the honor to report herewith the Department of Textiles and Clothing for the biennium 1919-20.

1. Department enrollment for	1919-20	233
	Summer Quarter	47
	Total.....	280

Classes taught with enrollment and instructors:

Courses—	Number of Students	Instructors
Textiles and Clothing a	36	Mrs. Ormsby
Textiles and Clothing b	14	Miss Richardson
Textiles and Clothing 1	107	Miss Moen Miss Richardson Mrs. Ormsby Miss Skidmore
Textiles and Clothing 2 (a & b)	22	Miss Moen
Textiles and Clothing 2 c	2	Prof. Hurst
Textiles and Clothing 3	55	Miss Richardson Miss Skidmore
Textiles and Clothing 4	16	Miss Moen
Textiles and Clothing 5	18	Prof. Fletcher Miss Moen
Textiles and Clothing 6	10	Miss Moen

The present enrollment for 1920, including
the Summer Quarter, 235.

Courses—	Number of Students Instructors	
Textiles and Clothing a	30	Mrs. Ormsby Miss Richardson
Textiles and Clothing b	10	Mrs. Ormsby
Textiles and Clothing 1	60	Miss Moen Miss Richardson Mrs. Ormsby
Textiles and Clothing 2	36	Miss Moen
Textiles and Clothing 3	45	Miss Richardson
Textiles and Clothing 4	11	Miss Moen
Textiles and Clothing 5	20	Prof. Fletcher Miss Moen
Textiles and Clothing 6	23	Miss Moen

II. The enrollment in the Department of Textiles and Clothing has increased materially in the last biennium.

Owing to this increase, especially in certain classes, the present classrooms are found to be too small. Room 36, used for laboratory work in Textiles and Clothing 1 and 3, is not large enough to comfortably accommodate the present enrollment in those classes, and Room 31, now used as a lecture room for Textiles and Clothing 2 (a and b), is also too small, since the enrollment in this course has doubled within the last year. I therefore suggest that Rooms 32 and 36 be made into one large laboratory, and Room 12, on the first floor, be used for lectures in Textiles 2.

Additional equipment is also needed. One dozen dress forms for advanced work in clothing construction. Two dozen tailor squares for pattern making, and a lantern with slides for illustrative purposes in the study of textile fabrics would materially increase the efficiency of instruction.

The present teaching staff will probably be ample for the next biennium, although at the present time there is a crowded condition in certain classes which may in the future make it necessary to have more sections available. In laboratory work especially is it desirable to limit the number of students in each class in order to give the necessary supervision to obtain good results.

Respectfully submitted,

JOHANNA MOEN,

Professor of Textiles and Clothing.

DEPARTMENT OF VETERINARY SCIENCE

To the President of the College:

Sir: I have the honor to submit herewith a report of the Department of Veterinary Science for the past biennium. The following courses have been given:

Veterinary Science a—	Vocational
Veterinary Science 1—	Junior College
Veterinary Science 2—	" "
Veterinary Science 3—	" "
Veterinary Science 4—	" "
Veterinary Science 5—	" "
Veterinary Science 6—	" "
Veterinary Science 7—	Senior College
Veterinary Science 8—	" "
Veterinary Science 20—	" "
Human Physiology	College

All courses listed have been given during one or more terms during the last two years. You will notice that outside of the regular work in Veterinary Science I have conducted a large class in Human Physiology.

The winter term has been the heaviest for this Department, and it has been almost impossible for one to look after all the work required of this Department. I have conducted the classes and laboratories with but very little student help.

Outside of the regular instructional work I have done some extension work as well as State Board of Horse Commissioner work, have maintained an extensive correspondence, answering numerous inquiries regarding animal diseases, etc. I have also written quite a number of articles for the newspapers as well as for farm and veterinary journals. In addition, I have looked after the health of all College animals.

We require laboratory or clinic of all students taking veterinary subjects. Our classes in this work are very large and we should have more help for properly conducting them. It is practically impossible for one teacher to look after all this work properly, especially during the winter term when attendance is the largest.

Our equipment is very limited. We have had only a few of our greatest needs supplied in the past. This all has a tendency to make our courses less attractive. The great-

est needs of this Department are the same which have been outlined in most of our former reports.

Veterinary Hospital and Equipment.

A building where all laboratory work could be undertaken and properly accomplished, where students would have some comfort as well as protection from inclement weather, where the College animals could be looked after, treated, and isolated when necessary, as well as outside animals brought to our clinics for advice, diagnosis and treatment, is needed. The needs of such a building have been outlined in former reports. I would refer you to these reports for estimate and full explanations.

The need for such a place was never greater than it is at present. The interest in work along veterinary lines which we are giving is increasing yearly. Many students studying agriculture wish to take all the veterinary subjects they can get in their courses.

Although no course in the Institution requires Veterinary Science as a prerequisite, more students elect it each year. It should, however, be a prerequisite for some of the courses in agriculture. We are trying to give students just what they actually need in handling livestock on the farm or ranch. Students taking the preliminary courses come back the following years and elect some of the advanced work in preventative medicine, sanitation, vaccination, and serum treatment. A veterinary hospital and equipment, with instruments, museum, etc., is a great necessity for our Institution.

In my report to you on March 11, 1920, the allowance for this Department was discussed, and we again refer to those requirements with the increased attendance this year. With a view to improvement, the Veterinary Department should have more attention and an increased allowance.

Respectfully submitted,

H. J. FREDERICK,

Veterinarian.

DEPARTMENT OF ZOOLOGY AND ENTOMOLOGY

To the President of the College:

Sir: I have the honor to report herewith the Department of Zoology and Entomology for the past biennium.

In the following table will be found a synopsis of the courses given in the Department:

No. of Course	Name of Course	1919-1920					Present Instructor
		Fall	Winter	Spring	Summer	Fall	
Ent. a	Bee-Keeping		7	9	17	24	G. E. King
Ent. 1	Agr'l Entomology ..		33				H. J. Pack
Ent. 2	Systematic Entom'y ..		1	1			H. J. Pack
Ent. 3	Economic Entom'y ..		1	1			H. J. Pack
Ent. 4	Lit. of Entom'y						H. J. Pack
Ent. 5	Research						H. J. Pack
Zoo. 1	Elementary Zoo.	74	70		17	30	H. J. Pack
Zoo. 3	Gen. Zoology	17	11				H. J. Pack
Zoo. 4	Economic Zoology ..			9			H. J. Pack
Zoo. 5	Parasitology	3					H. J. Pack
Zoo. 6	Advanced Zoology ..						H. J. Pack
Zoo. 7	Genetics		32				H. J. Pack
Zoo. 8	Eugenics			26			H. J. Pack
Zoo. 9	Histology & Emb'y ..						H. J. Pack
Zoo. 10	Research						H. J. Pack and G. E. King

A course in Bee-Keeping was added to the Department in the winter quarter of 1919-20, and should prove very successful. We have three students who will major in Zoology and Entomology, one of whom expects to graduate in 1921.

The Department at present is not completely organized. However we shall be able to handle the work of the Fall, Winter, and Spring Quarters of 1920-1921, without any addition to the present teaching force. In the reorganization of the Department I wish to emphasize the necessity of securing a first class laboratory assistant. This assistant should be qualified in Zoological Technique, Taxidermy and Photography. The duties of such an assistant would be to prepare and take care of material for laboratory use and assist students in the laboratory. He would also have charge of the museum, keeping the specimens in good condition and adding material to it prepared by himself.

A separate fund should be established for the museum. The growth of our museum in recent years has been very slow, as it has depended entirely upon departmental funds,

which are usually only sufficient to maintain the Department generally in working order. Many of our specimens of small birds and mammals are in poor condition and should be replaced by new ones. Adequate funds would enable us to initiate a vigorous program for the acquiring of representative collection of State birds and mammals, as well as other zoological groups.

Water pipes should be extended in Room 228 to the southeast corner for aquarium use. We have an aquarium in our store room, and if water connection were made as suggested above it could be set up and should prove very useful.

Our library, good as it is in many respects, still lacks a great number of important and necessary publications in Zoology and Entomology. I have endeavored to obtain the publications of many American institutions, and the most valuable contribution thus far has come from the University of California in the form of a complete set of its publications in Zoology.

Several hundred dollars could be used at once for library needs.

Respectfully submitted,

HERBERT J. PACK,

Acting head of Department of
Zoology and Entomology.

REPORT OF THE LIBRARY

To the President of the College:

Sir: I have the honor to submit a report of the Library, beginning November 1, 1918, and ending October 30, 1920.

The following number of students are enrolled in Library work:

1918-1919	1919-1920
7	6

The work consists in acquainting the students with the books of the Library; in giving special training in searching for information, and in the use of reference books in general. At present our greatest need is a larger Reference Library. Technical books requested by the different departments for general reference and research are necessary for effective work. This will require an increase of funds.

With each new acquisition of books we are reminded that more space is needed to house them. A Library Building surely should be the next addition to the Campus.

The following is a statement of the Library accessions:

Library Accessions—Statistical

Books Purchased	1,174	
Books by gift	312	
Books deposited by U. S. Government.....	363	
	<hr/>	
Total		1,849
Pamphlets purchased	15	
Pamphlets by gift	2,233	
Pamphlets by gift, U. S. Government.....	1,424	
	<hr/>	
Total Pamphlets		3,672
		<hr/>
Total addition to Library.....		5,521

Present Strength of Library.

Books	33,982	
Pamphlets (estimated)	45,566	
	<hr/>	
Total		79,548

Respectfully submitted,

HATTIE SMITH,

Acting Librarian.

REPORT OF THE PRACTICE HOME

October 29, 1920.

To the President of the College:

Sir: I have the honor to report herewith the Practice Home for the past biennium.

The Practice House was thoroughly renovated and re-decorated in the fall of 1919. The result has been very satisfactory from many points of view. The addition of some good pictures from the Art Department has helped out considerably in interesting the girls in works of art for the Home.

A six months old baby added to the family a much needed home feature. The care of the year-old child is giving the girls a training few college girls get, and it is greatly appreciated.

During the year 1919-20 there were five groups of six girls each, making a total of thirty girls, that took the course.

There is a pressing need for change in the kitchen from the present inefficient type to the buffet kitchen, also the addition of a new porch to supply a sleeping porch, a laundry and the needed kitchen porch.

Respectfully submitted,

AMY L. MERRILL,

Superintendent, Practice Home.

REPORT OF THE WOMAN'S ADVISORY COMMITTEE

To the President of the College:

Sir: I have the honor to submit herewith report of the Women's Advisory Committee.

An additional rest room was obtained in the fall of 1919 on the third floor, in which was placed three couches for the benefit of girls needing complete rest and relaxation.

Before the opening of the present school year the Ladies' Rest Room on the first floor was moved from the center of the main building to the west room of the south wing. A bright, airy, cheerful, roomy room is now occupied by the girls. It is much more quiet and secluded and makes a more ideal rest room than the old one.

The Committee has done what it could to care for the girls by placing some in homes to work for board, by settling difficulties that arise, and making the girls feel free to discuss troubles and sorrows with a friend.

The great need now is a full-time Dean of Women who can take care of the girls at all hours during school. Next to that we need rugs, tables, chairs and couches to fill our rest room so that every girl who wishes may have a place to sit down and relax. Also furnishings and decorations for the office of the Dean of Women.

Respectfully submitted,

AMY L. MERRILL,

Chairman Women's Advisory Committee.

**Registrar's Report of Attendance by Schools for the year
1919-20 to May 31, 1920**

	Agriculture (Men)	A. E. M. A. (Men)	Commerce (Men)	Commerce (Women)	Gen. Sci. (Men)	Gen. Sci. (Women)	Home Econ. (Women)	Total	Grand Total
COLLEGE—									
Graduates	8		1		1	2	1	13	
Seniors	20	6	8		5	6	6	51	
Juniors	19	5	7		5	7	21	64	
Sophomores	20	10	12	1	13	14	23	93	
Freshmen	118	55	50	16	30	37	87	393	
Specials	17	11	2		6	12	3	51	
	202	87	80	17	60	78	141		665
VOCATIONAL—	132	273	39	40	18	13	45		560
	334	360	119	57	78	91	186		1225

Summer School, 1919—		
Males	61	
Females	180	241
Correspondence Department and Regular Extension Courses—		
Males	310	
Females	255	565
		<hr/>
Less names repeated.....		2031
		63
		<hr/>
Total regular attendance		1968
Junior Extension Short Course—		
Logan—		
Boys	41	
Girls	37	
Cedar City—		
Boys	5	
Girls	9	126
		<hr/>
Total		2094

Registration in Special Extension Project Classes:

Study groups in Home Economics, Extension
Division, for the year ending June 30, 1920..... 23,666

(This total does not, in all cases, represent separate individuals, because some women are registered in two or three study groups.)

Study groups in Boys' and Girls' Club work,
Extension Division, for the year ending June
30, 1920 1,820

Total in organized instruction, Extension
Project Classes 25,486

We herewith submit a conservative estimate of our financial needs for the ensuing two years. We itemize for the year 1921 and a similar amount will be required for 1922.

The work of the Registrar's Office is rapidly increasing each year and as the school grows we need more help, supplies, etc.

Postage and stationery	\$ 200.00
Supplies, printing, etc.	400.00
Examination paper, etc.	100.00
Extra help	150.00
	<hr/>
	\$ 850.00
Duplicate items above for 1922	850.00
	<hr/>
	\$1,700.00

We respectfully call attention once more to the fact that our valuable records are in great danger of fire, and we feel that the time has come when a fireproof vault should be built for the preservation of these records.

Respectfully submitted,

P. E. PETERSON,

Registrar.

DEPARTMENT OF REPAIRS AND IMPROVEMENTS

To the President of the College:

Sir: I have the honor to submit herewith the report of the Department of Repairs and Improvements for the past biennium.

During the summer of 1919 the following were some of the larger improvements made:

A cement floor was put in the Motor Testing Laboratory.

Floor and wall tiling and new partitions were installed in the Women's Shower Room.

By removing a partition and building work benches and cupboards, an excellent shop was completed for the Art Department.

Weatherstrips were placed on all east windows in the Main Building.

All ceilings were plastered on one entire floor at the Chemistry Building.

A substantial addition was built to the porch of the house occupied by the Director of Extension.

Insulation material, as a protection against cold, was placed over the ceilings of the Main Building, Chemistry Building, and the Livestock Building.

A large amount of painting was done, including the halls and several rooms in the Main Building, the roof of the Chemistry Building, the new Horse Barn, and the Implement Shed; also some painting and wall papering at the residences and the Practice Home.

In addition to this, the usual upkeep of glass, shades, locks, and furniture repair was taken care of.

During 1920 the available funds permitted only of the minimum amount of repair and improvements. We constructed and assembled a considerable amount of furniture and equipment for the three new buildings. There was done only a moderate amount of painting. Two departments were moved to the Plant Industry Building.

A new tool room and stairway was built at the Mechanic Arts Building.

By extending the roof and adding one wall at the northeast corner of the Mechanic Arts Building we obtained a garage that will accommodate three touring cars.

Now, as to the needs for the coming biennium, let me call your attention to the following items, which I think should receive our first effort:

Painting the barns and several roofs, more especially the roof of the Mechanic Arts Building.

Tiling the Men's Shower Room at the Gymnasium.

Providing better lavatory and locker room facilities at the Mechanic Arts Building.

Foundation and some repairs to the Repair and Improvement Work Shop.

Foundation and erecting the new Greenhouse, the house being on hand but for lack of funds has not been erected.

Plastering ceilings at the second floor Chemistry Building.

Some rather badly worn floors in the Main Building should be replaced with hardwood floors.

By building roof and one wall, one of the Auto Repair rooms at the Mechanic Arts Building could be greatly enlarged.

Two sky-lights are needed in Mechanic Arts Building.

New seats are needed for the large lecture room at the Plant Industry Building.

Window shades should be provided for the last two new buildings.

The providing of a new mail truck for the daily town trip I feel certain cannot much longer be avoided.

The finishing of the third floor at the Plant Industry Building is, of course, very desirable, and I presume will be asked for by some one else.

Respectfully submitted,

R. O. LARSEN,

Superintendent of Buildings.

DEPARTMENT OF WATER, LIGHT, HEAT AND SEWERAGE

To the President of the College:

Sir: I have the honor to submit herewith a report of the Department of Water, Light, Heat and Sewerage for the past biennium.

Since my last report there has been quite an addition to the main heating plant. One new boiler, fan and stoker have been added. Also three new tunnels have been constructed, one between the Chemistry and Livestock Buildings and one between the Livestock and Plant Industry Buildings, and one between the Mechanic Arts and the Agricultural Engineering Buildings. The steam, water, sewer and electric lines are all connected up and in service in these tunnels, although not completed. We need brackets for the pipe lines to rest on, also all pipes should be covered with some good pipe covering to save condensation. The cost of this would be about \$2,000. Then we are in need of two more boilers with stokers, ash conveyors, etc. With the completion of boiler house this cost would be about \$25,000.

If the Carriage Shop and Foundry are to be steam heated it will require new pipe line and radiators, amounting to about \$1,000. I should like to have an air line in the Main Building attached to the steam line, amount \$2,000; also a cement sub-trench 4x6 feet in the Main Building basement, to care for return pipe lines. Some of these lines have been buried in the ground for twenty-five years and are rusted so that they leak and give considerable trouble. This would cost about \$3,000.

Maintenance for next two years, coal.....	\$25,000
Firing tools, oil waste, belting	400
Extra on stoker and relining boilers	600
Radiators, valves, fitting pipe, etc.	600
Packing, pump valves, rods, etc.	250

Water Works and Sewerage.

Our new water main from the City Reservoir was completed last spring, giving us a much better water supply for building and campus. Last summer we were able to get water on the top floors of all buildings, whereas in the

past, when attached to the City Main, sometimes we could not get water on the first floors. There should be an extension of water main at Cattle Barn and the fire hydrant changed over onto the main road west of the Sheep Barn. The cost would be about \$600. The maintenance, such as valves, taps, fitting pipe, packing tools, taxes, etc., \$3,000. Sewer maintenance, \$300.

Power and Light.

The power and light lines have been changed the last year and an addition of one large transformer made, giving a much better service than in the past. Still there are some improvements which should be made. The trees through which our high lines run gives us a lot of trouble, especially at nights when there is a strong canyon wind blowing, the branches make shorts on the line and it is almost impossible sometimes to keep the lines in service. The trees should be cut down all along the lines. I recommend that the secondard lines west of the Livestock Building be taken down and run into the Pavillion to save accidents where they cross the high line. Then three poles could be taken out and give the Campus a better appearance. The cost estimated is about \$300.

The Chapel is very much in need of new fixtures and lights, estimated cost being \$500.

Estimated maintenance for next two years for lamps.. \$1,500

Fuses, tape, knobs, cleats, searches, wire, sockets,	
rosettes, tools	300
Batteries, bells, repair on clock, etc.	200

Respectfully submitted,

CHARLES BATT,

Supt. Water, Heat, Light and Sewerage.

REPORT OF THE STATE POWER PLANT

To the President of the College:

Sir: The State Power Plant has had a reasonably successful run during the past biennium with the exception of one breakdown, due to shearing of the thrust collars on the turbine, which required the closing of the plant for ten days. During this time the Power House and all the State Institutions, including the Agricultural College, had to purchase power from the Utah Power & Light Company.

The water during the winter of 1919 and 1920 was the lowest that we have had for possibly the last six years. This extremely low water made it necessary to purchase more power from the Utah Power & Light Company than is usual under normal conditions.

Since the last biennium, we have added at the Utah Agricultural College two large buildings, and at the University of Utah, three large buildings, among which, at the latter place, is the new Dining Hall. This Dining Hall is equipped with electric ranges and a large electric baking oven, which require a large amount of electricity to operate. Besides these additions, the State Prison has added motors and a large cooking range and baking oven, which additions alone amount to 50 kilowatts. The addition of these buildings and this additional equipment has increased the demand for power to such an extent that additional transmission charges must be taken care of.

The extremely high water of 1920 washed away so much of the high gravel bar which was in the channel, that it is now necessary to extend our apron to the end of the present tailrace wall. This will be a permanent improvement and afford additional protection in high water. This extension will cost \$1,000.00.

One of the penstock gates, which was constructed of wood, has become so water-soaked that in lowering it last winter to allow us to repair the turbine, it bulged and, had we not braced it, it would have failed completely. This gate, installed, will cost approximately \$1,000.00.

Further requirements for the next biennium are as follows:

Salaries, 24 months at \$500.00 per month.....	\$12,000.00
Transmission charges, 24 months at \$700.00 per month	16,800.00
Extra help during vacations	500.00
Traveling expenses	250.00
Maintenance and supplies	1,000.00
Unforeseen accidents to machinery and high water damage	2,500.00
Overdraft	2,600.00
Total	<u>\$35,650.00</u>

The Legislature of 1917, without notifying those who put in the budget, increased the biennium period, which previously ran from January, 1917, to January, 1919, extending the period for appropriations ahead to April, 1919, making 27 instead of 24 months. We were not aware of the fact that this biennium period had been extended to 27 months, so that during the periods, 1917 to 1919 and 1919 to 1921, we asked for only 24 months' operating expenses. Due to this fact I am requesting that the Legislature appropriate at this time, the additional operating expenses, as follows:

Three months at \$1,377.00 per month	\$ 4,131.00
24 months, as above	\$35,650.00
Additional three months	4,131.00
Improvements to apron, and new gate	2,000.00
Total	<u>\$41,781.00</u>

Respectfully submitted,

RAY B. WEST,

Engineer in Charge.

BIENNIAL FINANCIAL REPORT OF THE SECRETARY

For Two Years, Ending June 30, 1920

Logan, Utah, December 10, 1920.

Hon. President and Board of Trustees,

Utah Agricultural College.

Ladies and Gentlemen:

The following report is for the period from July 1, 1918, to June 30, 1920.

It is made up of the following items:

- I. A Report of the Receipts and Expenditures of all Regular Funds, as follows:
 - A. The College Proper.
 - B. The Cedar City Branch.
 - C. The Extension Division.
 - a. State Extension Fund.
 - b. The Smith Lever Fund.
 - D. The Experiment Station.
 - a. The Hatch Fund.
 - b. The Adams Fund.
 - c. The State Appropriation.
 - d. The Miscellaneous Fund (Sales, etc.).
 - e. Ground Water Fund.
 - E. The Power Plant.
- II. A Report of the College Incidental Fund.
- III. A Report of the Receipts and Disbursements of the Student Body Organization.
- IV. A Summary of the Inventory of all College Property.
- V. A Report of the Fire Insurance Carried.

I. RECEIPTS AND EXPENDITURES

A. The College

RECEIPTS—

Cash on Hand July 1, 1918.....	\$ 1,652.52
From U. S. Government (Morrill & Nelson Fund).....	100,000.00
From State (General Maintenance—Mill Tax).....	275,309.24
From State (Interest on Land Grant).....	32,179.13
From State (New Roof—Mech. Arts Building).....	1,060.39
From State—Demobilizing 145th	1,000.00
Fees from Students (Entrance and Laboratory).....	18,260.70
Sale of Products, etc.....	19,213.67
Summer School Receipts.....	3,061.40
Gymnasium Fees Turned In.....	941.30
Refund Freight Paid.....	753.95
Student Deposits Forfeited.....	35.33
Interest	331.80
Military Department—Receipts from U. S. Government..	129.60
From State for F. L. West.....	260.00
From Periwig Club for Flag in Chapel.....	30.00
1917 Graduating Class Gift—Clock.....	133.35
1919 Graduating Class Gift—Memorial Tablet.....	265.00
From Logan City for Souvenir Edition Student Life.....	97.80
From Cache Valley Electric for Light Service.....	38.40
Sale of Trucks	2,000.00
Refund from U. S. Government on Aeroplane Engine.....	500.00
Refund from State Council of Defence.....	500.00
Rental Athletic Equipment by S. A. T. C.....	235.00
S. A. T. C. Donation to Military Department.....	200.00
S. A. T. C. Donation for Medals for Hospital Service.....	100.00
State Industrial Commission.....	121.31
Bookstore Fund Balance turned in.....	254.93
Cafeteria Fund Balance turned in.....	870.63
Sundries	1,075.67

Total Maintenance Receipts.....\$ 460,611.12

SPECIAL APPROPRIATIONS

RECEIPTS—

Animal Husbandry Building.....	27,325.99
Water Connection at Barn.....	61.60
New Pasture	35.97
Granary	1,744.71
Barracks No. 1.....	70,000.00
Barracks No. 2.....	78,640.80
Live Stock	3,000.00
Land Purchase	16,137.75
Horse Barn	5,000.00
Addition to Heating Plant.....	21,008.46
Heating Tunnels	4,966.68
Pressure Connection with City Reservoir.....	9,942.45
Redistributing Water Supply.....	1,194.95
Rewiring and New Lighting	5,000.00
Seed House	2,453.25
Vegetation House	1,774.41
Frt. Refund Equip. Live Stock Building.....	23.07
Irrigation Lab. Frt. Refund.....	11.54
<hr/>	
Total Special Appropriation Receipts.....	\$ 248,321.63

SOLDIER TRAINING

Section A

RECEIPTS—

From U. S. Government.....	\$ 140,057.01
Miscellaneous	6,576.74
	<hr/>
	\$ 146,633.75

Section B

From U. S. Government.....	\$ 48,428.07
	<hr/>
	\$ 48,428.07
Total Soldier Training Receipts.....	\$ 195,061.82
Grand Total Receipts.....	\$ 903,994.57
Add Overdraft Our Books.....	129,643.63
	<hr/>
*Overdraft on Treasurer.....	\$134,327.83
Less Cash on Hand.....	4,684.20
(Including Revolving Fund \$1,000.00.)	
Grand Total	<hr/>
	\$1,033,638.20

* Of the above book Overdraft, \$53,039.21 is covered by money due from State on Deficits allowed by State Board of Examiners and Expenditures on Special Appropriations money which has not yet been received, leaving the actual Overdraft on General Maintenance Fund \$76,604.42.

The College

EXPENDITURES—

Overdraft on Treasurer July 1, 1918.....	\$	43,944.51
Salaries		268,487.44
From Government Fund	\$100,000.00	
From State Fund.....	168,487.44	
<hr/>		
Labor		52,504.35
Supplies		53,979.78
Postage and Stationery.....		5,053.96
Telephone and Telegraph.....		2,267.51
Traveling Expense		9,218.98
General Expense		55,726.60
Repairs and Improvements.....		18,030.84
Furniture and Fixtures.....		11,476.56
Tools, Machinery and Implements.....		6,419.02
Scientific Apparatus		2,191.77
Books, Maps, etc.....		4,437.49
Live Stock		2,176.06
Unclassified Equipment		131.99
Building and Land.....		189.27
<hr/>		
Total General Maintenance Disbursements.....	\$	536,236.13

Special Appropriations:

EXPENDITURES—

Animal Husbandry Building.....	\$	1,119.80
Water Connection at Barn.....		68.87
New Pasture		19.00
Granary		1,754.51
Barracks No. 1.....		96,958.31
Barracks No. 2.....		144,666.12
Live Stock		2,926.10
Land Purchase		16,967.11
Horse Barn		6,526.43
Addition to Heating Plant.....		23,360.29
Heating Tunnels		4,975.31
Pressure Connection with City Reservoir.....		11,243.33
Redistributing Water Supply.....		1,663.72
Rewiring and New Lighting.....		6,309.71
Seed House		2,453.25
Vegetation House		1,774.41

Special Deficits:

Equipment Live Stock Building.....	\$ 7,868.00
Furnishing Second Floor Plant Industry Building.....	513.85
Equipment and Furniture First Floor Plant Industry Bldg.	3,060.40
Equipment and Furniture Second Floor Plant Industry Bldg.	6,485.41
Irrigation Laboratory	2,313.54
Improvement Women's Showers.....	1,867.82
<hr/>	
Total Special Appropriation Disbursements.....	\$ 344,895.29

Soldier Training, Section A:**EXPENDITURES—**

Overdraft July 1, 1918.....	\$ 14,902.68
Expended	106,788.60
<hr/>	
	\$ 121,691.28

Section B:

Expended	\$ 30,815.50
<hr/>	
	\$ 30,815.50
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Total Soldier Training Disbursements.....	\$ 152,506.78
<hr/>	
Grand Total Disbursements.....	\$1,033,638.20

B. THE CEDAR CITY BRANCH

RECEIPTS—

Cash on Hand July 1, 1918, (Revolving Fund).....	\$ 200.00
From State—General Maintenance.....	70,065.74
State Appropriation—Furniture and Equipment.....	3,920.73
State Appropriation—Campus Improvement	56.26
State Appropriation—New Buildings	136.00
State Appropriation—Improvement and Repairs.....	4,713.33
State Appropriation—Equipment Tractor.....	1,600.00
State Appropriation—Live Stock	425.00
State Appropriation—Scales for Weighing Live Stock....	200.00
State Appropriation—Fences .....	.....
State Appropriation—Additional Shop Equipment.....	1,232.69
State Appropriation—Additional Laboratory Equipment..	.....
State Appropriation—Library Books	715.28
State Appropriation—Sewing Machines	306.92
State Appropriation—Replacement, Wornout Farm Im- plements and Machinery.....	.....
New Buildings:	
Second Unit Poultry House.....	228.97
Small Dairy	2,861.11
Feed Room in Sheds.....	.....
Addition to Shops.....	2,500.00
Hog Pens	231.70
Fees and Sales	5,892.76
Overdraft	16,702.07
	<hr/>
	\$ 111,788.56

EXPENDITURES—

Overdraft on Treasurer.....	\$ 139.03
Salaries	62,841.01
Labor	3,841.57
Supplies	4,904.85
Postage and Stationery.....	563.82
Printing and Advertising	2,091.94
Light, Power and Fuel.....	3,770.24
Traveling Expenses	1,558.36
Library	1,118.84
Equipment	2,001.32
Farm	2,161.60
Insurance	415.85
Interest	52.20
Repairs, Heating Plant, etc.....	406.18
Sundries	2,704.75

Special Appropriations—

Furniture and Equipment.....	\$ 4,128.90
Campus Improvement	162.89
New Buildings	455.75
Improvement and Repairs.....	6,180.25
Equipment Tractor	1,600.00
Live Stock	425.38
Scales for Weighing Live Stock.....	200.00
Fences	94.97
Additional Shop Equipment.....	1,767.41
Additional Laboratory Equipment.....	7.62
Library Books	859.06
Sewing Machines	369.26
Replacement Wornout Farm Implements and Ma- chinery	180.04

New Buildings—

Second Unit Poultry House.....	228.97
Small Dairy	3,605.60
Feed Room in Shed.....	8.00
Addition to Shops	2,500.00
Hog Pens	442.90

\$ 111,788.56

C. EXTENSION DIVISION

a. State Extension Fund

RECEIPTS—

From State Appropriation	\$ 74,757.61
From Carbon County	1,500.00
From Piute County	200.00
From Garfield County	430.00
From Sanpete County	1,241.67
From Weber County	800.00
From Kane County	637.00
From Cache County	1,200.00
From Rich County	300.00
From Millard County	1,000.00
From Salt Lake County.....	600.00
From Emery County	1,430.00
From Summit County	300.00
From Wasatch County	500.00
From Grand County	125.00
From Iron County	500.00
From Wayne County	500.00
From Beaver County	1,050.00
From Uintah County	700.00
From Duchesne County	125.00
From Morgan County	200.00
From Utah County	1,050.00
From San Juan County	375.00
From Sevier County	950.00
From Juab County	250.00
From Davis County	800.00
From Box Elder County	1,200.00
From Tooele County	700.00
From Washington County	500.00
Miscellaneous	451.31
Auto Sales	2,967.30
Gopher Poison Sales	4,236.71
Overdraft June 30, 1920.....	9,137.45

\$ 110,714.05

EXPENDITURES—

State Extension Regular:

Overdraft on Treasurer June 30, 1918.....	\$ 1,509.41
Salaries	44,229.41
Labor	2,886.45
Publications	255.75
Printing and Small Stationery.....	1,216.93
Postage and Stationery.....	899.59
Heat, Light and Water.....	25.80
Supplies	5,486.17
Library	100.11
Tools, Implements and Machinery.....	61.60
Furniture and Fixtures	470.94
Scientific Apparatus	157.00
Live Stock .....	.....
Traveling Expense	26,276.05
Contingent Expense	1,959.26

State Smith Lever:

Salaries	24,670.90
Labor	508.68

\$ 110,714.05

b. Smith Lever

RECEIPTS—

From U. S. Government	\$ 45,179.58
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EXPENDITURES—

Salaries	\$ 33,041.73
Labor	630.29
Publications	1,448.58
Stationery and Small Printing.....	631.47
Postage and Stationery.....	406.11
Heat, Light and Water.....	.....
Supplies	70.18
Library	59.95
Tools, Implements and Machinery.....	26.30
Furniture and Fixtures	216.92
Scientific Apparatus .....	.....
Live Stock .....	.....
Traveling Expense	8,614.05
Contingent Expense	34.00

\$ 45,179.58

Summary of Extension Division

RECEIPTS—

State Extension Fund	\$ 101,576.60
Smith Lever Fund	45,179.58
Overdraft as shown above.....	9,137.45
	<hr/>
	\$ 155,893.63

EXPENDITURES—

State Extension Fund	\$ 110,714.05
Smith Lever Fund.....	45,179.58
	<hr/>
	\$ 155,893.63

D. EXPERIMENT STATION

a. Hatch Fund

RECEIPTS—

From U. S. Government.....	\$ 30,000.00
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EXPENDITURES—

Salaries	17,339.35
Labor	5,223.80
Publications	85.63
Postage and Stationery.....	614.71
Freight and Express.....	116.18
Heat, Light, Water and Power.....	151.59
Chemical Supplies	113.97
Seeds, Plants and Sundry Supplies.....	1,382.63
Fertilizers	70.00
Feeding Stuffs	1,938.53
Library	515.99
Tools, Machinery and Implements.....	567.02
Furniture and Fixtures	371.13
Scientific Apparatus	42.94
Live Stock	41.47
Traveling Expense	1,089.79
Contingent Expense	40.00
Building and Land.....	295.27
	<hr/>
	\$ 30,000.00

b. Adams Fund

RECEIPTS—

From U. S. Government	\$ 30,000.00
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EXPENDITURES—

Salaries	17,031.31
Labor	8,194.02
Publications
Postage and Stationery.....	18.02
Freight and Express	278.86
Heat, Light, Water and Power.....	155.41
Chemical Supplies	1,405.42
Seeds, Plants and Sundry Supplies.....	666.99
Fertilizers .....	.....
Feeding Stuff	200.20
Library .....	.....
Tools, Implements and Machinery.....	241.23
Furniture and Fixtures.....	231.64
Scientific Apparatus	1,045.37
Live Stock .....	.....
Traveling Expense	467.85
Contingent Expense .....	.....
Building and Land.....	63.68
	<hr/>
	\$ 30,000.00

c. State Station

RECEIPTS—

Balance on Hand July 1, 1918.....	\$ 9,450.19
From State Appropriation.....	76,198.52
Arid Farm Sales	2,316.00
Irrigation and Drainage Sales.....	1,538.71
Panguitch School Farm Sales.....	10,587.77
Horticulture Department Sales.....	179.85
Agronomy Department Sales.....	386.77
Soil Survey Department Sales.....	167.87
Davis County	1,000.00
	<hr/>
	\$ 101,825.68

EXPENDITURES—

Salaries	31,766.06
Labor	22,108.53
Publications	6,998.80
Postage and Stationery	2,057.21
Freight and Express.....	1,072.90
Heat, Light, Water and Power.....	201.96
Chemical Supplies	12,851.07
Seeds, Plants and Sundry Supplies.....	3,076.80
Fertilizers	266.50
Feeding Stuffs	1,811.85
Library	162.43
Tool Implements and Machinery.....	4,542.84
Furniture and Fitures.....	1,228.59
Scientific Apparatus	822.94
Live Stock	6,668.89
Traveling Expense	6,417.26
Contingent Expense	729.60
Building and Land.....	1,528.81
Balance	9,078.64
	<hr/>
	\$ 101,825.68

d. Station Miscellaneous

RECEIPTS—

Balance with Treasurer July 1, 1918.....	599.66
Agronomy Department Sales.....	2,187.10
Poultry Department Sales	4,058.72
Animal Husbandry Department Sales.....	4,728.18
Botany Department Sales.....	86.45
Horticultural Department Sales.....	67.91
Uintah County	2,500.00
	<hr/>
	\$ 14,228.02

EXPENDITURES—

Salaries	
Labor	311.73
Publications	
Postage and Stationery	30.35
Freight and Express.....	42.91
Heat, Light, Water and Power.....	4.64
Chemical Supplies	214.38
Seeds, Plant and Sundry Supplies.....	1,064.38
Fertilizers	
Feeding Stuff	2,016.75
Library	92.91
Tools, Implements and Machinery.....	267.72
Furniture and Fixture.....	125.36
Scientific Apparatus	478.32
Live Stock	
Traveling Expense	1,306.36
Contingent Expense	15.00
Buildings and Land.....	25.00
Balance June 30, 1920.....	8,272.21
	<hr/>
	\$ 14,228.02

e. Ground Water Fund

RECEIPTS—

State Appropriation	\$ 17,510.35
Sales, etc.	630.75
Overdraft June 30, 1920.....	1,765.18
	<hr/>
	\$ 19,906.28

EXPENDITURES—

Expended to June 30, 1920.....	\$ 19,906.28
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SUMMARY OF EXPERIMENT STATION

RECEIPTS—

Hatch Fund	\$ 30,000.00
Adams Fund	30,000.00
State Station Fund	101,825.68
Miscellaneous Fund	14,228.02
Ground Water Fund	18,141.10
Total	<hr/> \$ 194,194.80

EXPENDITURES—

Hatch Fund	\$ 30,000.00
Adams Fund	30,000.00
State Station	92,747.04
Miscellaneous	5,955.81
Ground Water	19,906.28
Balance as shown above.....	15,585.67
Total	<hr/> \$ 194,194.80

E. STATE POWER PLANT

RECEIPTS—

State Appropriation	\$ 29,764.65
Overdraft June 30, 1920.....	2,783.01
	<hr/> \$ 32,547.66

EXPENDITURES—

Overdraft July 1, 1918.....	\$ 1,282.22
Salaries for Operation	8,844.30
Labor—Extra for Operation, etc.....	1,970.10
Transmission Charges	17,537.38
Supplies, Oil, etc.	879.85
Telephone and Telegraph.....	110.33
Traveling Expense	43.19
Equipment	510.97
Repairs and Improvement.....	1,369.32
	<hr/> \$ 32,547.66

RECAPITULATION, RECEIPTS AND EXPENDITURES—

Summary of Receipts

1. Regular Fund:	
a. College Proper	\$ 903,994.57
b. Cedar City Branch	95,086.49
c. Extension Division	146,756.18
d. Experiment Station	194,194.80
e. Power Plant	29,764.65
2. Incidental Fund	79,866.99
3. Student Body Fund Net Receipts.....	7,142.15
Overdraft as above	\$ 149,412.11
	<hr/>
	\$1,606,217.94

EXPENDITURES—

1. College Proper	\$1,033,638.20
Cedar City Branch	111,788.56
Extension Division	155,893.63
Experiment Station	178,609.13
Power Plant	32,547.66
2. Incidental Fund.....	85,843.11
3. Student Body Fund Net Cost.....	7,897.65
	<hr/>
	\$1,606,217.94

II. COLLEGE INCIDENTAL FUND

The following is a report of the Receipts and Expenditures of the College Incidental Fund for the two years ending June 30, 1920. In this fund we handle all merchandising and trust accounts. The accounts are either carried perpetually in this fund or the profits are turned in to the General Fund at the end of each year.

RECEIPTS—

Balance 1912 Class Locker Fund, July 1, 1918.....	\$ 21.70
1912 Class Locker Fund Receipts during two years.....	356.50
Cafeteria Sales, two years.....	31,216.65
Balance State Board Horse Commissioners, July 1, 1918....	829.04
State Board Horse Commissioners.....	1,579.50
Printing Department	2,281.26
Balance Class Loan Fund, July 1, 1918.....	220.80
Loan and Scholarship Fund.....	3,006.40
Bookstore Sales, two years.....	31,357.77

Balance Military Ball Fund, July 1, 1918.....	6.47
Military Ball Receipts	296.50
Gymnasium Fees, two years.....	3,579.30
Student Deposits (Laboratory)	4,628.85
Military Suits Sold to Students.....	20.23
Adams Field Fund	465.98

Total Receipts\$ 79,866.99

Overdraft Bookstore, Carried Forward.....\$	23.30
Overdraft on Creamery, Carried Forward.....	3,892.70
Overdraft Loan and Scholarship Fund, Carried Forward..	1,409.50
Overdraft State Board Horse Commissioners, Carried Forward	563.21
Overdraft Military Ball, Carried Forward.....	19.40
Overdraft Printing Department, Carried Forward.....	424.49

Total\$ 86,199.59

Expenditures—

Overdraft 1912 Class Locker Fund.....\$	41.95
Cafeteria	30,346.02
Cafeteria Balance paid to College.....	870.63
State Board of Horse Commissioners.....	2,971.75
Printing Department Overdraft, July 1, 1918.....	620.85
Printing Department	2,084.90
Loan and Scholarship Fund.....	4,636.74
Bookstore Overdraft, July 1, 1918.....	1,042.42
Bookstore	30,083.72
Bookstore Balance paid to College.....	254.93
Military Ball Fund.....	322.37
Gymnasium	2,638.00
Gymnasium Fund Balance paid to College.....	941.30
Students' Deposits Refunded	3,706.70
Student Deposits Fund Balance paid to College.....	922.15
Adams Field Overdraft, July 1, 1918.....	465.98
Creamery Overdraft, July 1, 1918.....	3,892.70

Total Disbursements\$ 85,843.11

Balance Military Suits Carried Forward.....	20.23
Balance 1912 Class Locker Fund.....	336.25

Total\$ 86,199.59

III. STUDENT BODY ORGANIATION

The following is a report of the Receipts and Expenditures of the U. A. C. Student Body Organization for the two years ending June 30, 1920:

	Net Receipts	Net Cost
Balance on Hand July 1, 1918.....	\$ 154.80	
Fees	5,863.00	
Receipts	\$ 6,692.00	
Refunded	829.00	
Faculty Tickets Sold.....	340.00	
Football		\$ 1,245.60
Receipts	4,298.93	
Paid Out	5,544.53	
Basketball	441.55	
Receipts	1,674.26	
Paid Out	1,232.71	
Baseball		408.91
Receipts	87.77	
Paid Out	496.68	
Track		1,652.27
Receipts	521.38	
Paid Out	2,173.65	
Tennis		112.80
Receipts		
Paid Out	112.80	
Student Body Dances		49.45
Receipts	176.15	
Paid Out	225.60	
Lyceum Course		762.80
Receipts	1,218.79	
Paid Out	1,981.59	

	Net Receipts	Net Cost
Dramatics	12.10	
Receipts	578.75	
Paid Out	566.65	
Musicals	30.65	
Receipts	720.08	
Paid Out	689.43	
Debating		368.70
Receipts	50.00	
Paid Out	418.70	
Student Life		1,602.74
Receipts	1,203.90	
Paid Out	2,806.64	
Miscellaneous Athletics		310.03
Unclassified Song Book Sales, etc.....	40.80	
Athletic Awards	259.25	
"A" Day		100.39
Receipts	\$ 78.11	
Paid Out	178.50	
Awards—Metals, Sweaters, etc.....		396.10
Office Help		180.00
Printing and Stationery		105.33
Sweaters for Cheer Leader		15.10
Miscellaneous Expense		587.43
Overdraft	755.50	
	<u>\$ 7,897.65</u>	<u>\$ 7,897.65</u>

IV. INVENTORIES

(Not Including Supplies and Land Grant)

June 30, 1920

I.—The College:

Land and Water Rights, 187 acres @\$300.00 per acre....\$	56,100.00
Buildings and Fixed Equipment.....	1,179,600.00
Main Building	\$300,000.00
Boiler House	60,000.00
Gymnasium	90,000.00
Chemistry Building	100,000.00
Experiment Station	4,000.00
Mechanic Arts Building	50,000.00
Woman's Building	50,000.00
Agricultural Engineering Bldg.....	100,000.00
Plant Industry Building.....	150,000.00
New Live Stock Building.....	100,000.00
State Power Plant	80,000.00
Transformer House and Substation.....	4,000.00
Seed House	2,500.00
Vegetation House	2,000.00
Residences	14,500.00
President's	\$ 5,000.00
Director's	3,000.00
Agronomist's	2,000.00
Three Workmen's Cottages	4,500.00
Farm Buildings	40,200.00
Horse Barn	6,500.00
Cattle Barn	10,000.00
Sheep Barn	6,000.00
Piggery Barn	1,700.00
Poultry House	4,700.00
Stock Judging Pavilion....	5,300.00
Tie Sheds and Fencing.....	3,000.00
Granary	3,000.00
Veterinary Hospital	1,500.00
Conservatory	6,000.00
Fixed Equipment	24,900.00
Sewer System	6,000.00
Water Works	18,000.00
Commercial Department	
Office Equipment.....	900.00

General Equipment		202,294.03
Offices	6,734.05	
President's Office.....	3,849.75	
Secretary's Office	2,260.80	
Registrar's Office	623.50	
Departments of Instruc- tion	151,886.38	
Agronomy	2,433.62	
Animal Husbandry	12,300.15	
Fine Arts and Applied..	1,901.68	
Bacteriology	3,346.56	
Botany	3,564.00	
Correspondence Study ..	293.05	
Chemistry	6,095.00	
Farm Foreman	2,776.70	
Commerce	5,435.00	
Dairying	13,505.25	
Home Economics	428.69	
Carpenter Shop	7,998.08	
Engineering	5,163.65	
English	432.00	
Farm Machinery	12,123.97	
Horticulture	711.60	
Green House	11,624.20	
History	196.50	
Irrigation	575.75	
Mathematics	523.50	
Military	380.95	
Modern Languages	28.50	
Music	3,483.45	
Geology and Mineral- ogy	1,992.65	
Physics	8,388.68	
Competitive Athletics..	969.85	
Physical Education	3,847.36	
Veterinary Science	731.30	
Zoology and Entomol- ogy	8,040.19	
Poultry Laboratory	420.92	
Medical Supervision	387.94	
Machine Shop No. 5, M. A. Building	10,080.64	
Mechanical Drawing	1,028.00	
Forging Department	6,584.19	
Foods and Dietetics	8,840.61	
Textiles and Clothing....	2,700.75	

Practice House	975.32	
Rest Room	517.63	
Publicity	280.00	
Public Speaking	64.00	
Accounting and Business Practice	290.00	
Books in President's Office and Board Room	424.50	
Miscellaneous Equipment		43,673.60
Library	23,543.96	
Bookstore	789.25	
Janitorial	6,944.17	
Construction, Repairs and Plumbing	3,272.75	
State Board Horse Commissioners	529.92	
Cafeteria	3,359.30	
Bookstore Merchandise	5,234.25	
Total		\$1,437,994.03

II—Branch Agricultural College, Cedar City.

Land Campus (46 acres@\$500.00 per acre)		\$ 23,000.00
Arid Farm (80 acres@\$50.00 per acre)....		4,000.00
Buildings and Field Equipment.....		225,229.19
Library Building	\$ 60,000.00	
Science Building	75,000.00	
Mechanic Arts Building	15,000.00	
Auto Shop Building	4,000.00	
Library (value)	4,687.15	
Boiler House and Heating Plant.....	15,000.00	
Dairy Equipment	1,206.00	
Apparatus, Tools, Machinery.....	3,621.00	
Equipment of Class Rooms and Offices	35,247.04	
Live Stock	4,968.00	
Sheds and Yards	6,000.00	
Camp House	500.00	
Total B, A, C.....		\$ 252,229.19

III.—Extension Division:

General Equipment		\$ 7,672.32
Offices	\$ 6,450.92	
Home Economics	108.50	
Boys and Girls' Club.....	71.10	

Civic Center, Salt Lake.....	27.88
Counties	1,013.92
Box Elder County Agent,	
Dem. Equipment	\$ 32.55
Utah County Agent, Dem.	
Equipment	77.15
Millard County Agent,	
Dem. Equipment	142.00
Sanpete County Agent,	
Dem. Equipment	70.61
Sevier County Agent,	
Dem. Equipment	56.00
Cache County Agent,	
Dem. Equipment	23.25
Davis County Agent, Dem.	
Equipment	38.34
Beaver County Agent, Dem.	
Equipment	62.00
Carbon County Agent,	
Dem. Equipment	14.70
Emery County Agent,	
Dem. Equipment	26.50
Piute County Agent, Dem.	
Equipment	35.00
Salt Lake County Agent,	
Dem. Equipment	46.03
San Juan County Agent,	
Dem. Equipment	30.50
Tooele County Agent, Dem.	
Equipment	5.00
Uintah County Agent,	
Dem. Equipment	55.00
Washington County Agent,	
Dem. Equipment	57.10
Iron County Agent, Dem.	
Equipment	17.50
Weber County Agent, Dem.	
Equipment	140.14
Summit County Agent,	
Dem. Equipment	14.30
Irrigation	70.25

Total Extension

\$ 7,672.32

IV.—Experiment Station:

General Equipment		\$ 37,533.65
Offices	\$ 4,712.50	
Directors	\$ 1,720.00	
Secretary's	218.00	
Clerks	379.50	
Library	1,320.00	
Basement	15.00	
Mailing Room	140.00	
Calculating Machines ..	920.00	
Departments	32,821.15	
Agronomy	2,199.70	
Chemistry and Bact....	9,505.26	
Horticulture	1,021.41	
Poultry	5,242.60	
Zoology and Entomol- ogy	1,594.00	
Range Management	532.52	
Photographic	103.60	
Nephi Substation	2,207.70	
Irrigation	10,414.36	
Arid Farms, Buildings and Equipment....		\$ 2,207.70
Panguitch Farm—Equipment		4,935.35
Total Experiment Station.....		44,676.70
Grand Total		1,742,571.89

The State Power Plant is included above, but should probably not be considered as College Property.

The above Inventories for Equipment were hurriedly compiled from the Inventories as handed in by the departments in the rough. They will be checked, corrected and permanently filed in the secretary's office.

V. REPORT OF THE FIRE INSURANCE CARRIED BY THE UTAH AGRICULTURAL COLLEGE

December 10, 1920

All of the insurance carried at the plant at Logan, with the exception of boiler and elevator insurance and very recent buildings, is covered by a blanket policy, as follows:

Main Building and Contents.....	\$150,000.00
Experiment Station and Contents.....	3,500.00
Woman's Building and Contents.....	42,000.00
Mechanic Arts Building and Contents.....	43,000.00
Transformer House and Contents.....	1,000.00
Poultry House and Contents.....	3,600.00
Horse Barn and Contents.....	4,000.00
Auto and Machine Shed.....	2,200.00
Cattle Barn and Contents.....	8,500.00
Sheep Barn and Contents.....	3,500.00
President's Residence	3,200.00
Director's Residence	2,500.00
Agronomist's Residence	2,000.00
Three Employees' Cottages	3,000.00
Green House and Contents.....	2,500.00
Piggery	1,000.00
Stock Judging Pavilion	4,000.00
Gymnasium and Contents.....	39,000.00
Chemistry Building and Contents.....	47,000.00
Dairy and Live Stock Building and Contents.....	45,000.00
Plant Industry Building and Contents.....	53,000.00
Agricultural Engineering Building and Contents.....	42,000.00
Auto and Tractor Laboratory and Contents.....	4,000.00
Granary and Contents	1,500.00
Total	\$511,000.00

Insurance is carried in addition to the above as follows:

Cedar City Branch Buildings

Library Building and Contents.....	\$ 22,000.00
Physical Building and Contents.....	33,000.00
Gymnasium and Mechanic Arts Building.....	12,000.00
B. A. C. Total.....	\$ 67,000.00
Seed House	\$ 1,500.00

Elevator at Woman's Building.....	10,000.00
Boilers	15,000.00

Total Insurance Carried.....	\$604,500.00
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This is divided among various companies as follows:

Home Fire Insurance Company of Utah.....	\$154,000.00
National Union Fire Insurance Company.....	49,500.00
Home Insurance Company of New York.....	40,000.00
Milwaukee Mechanic Insurance Company.....	29,200.00
North Western National Insurance Company.....	30,000.00
Fidelity Phenix Fire Insurance Company of New York.....	50,000.00
The North River Insurance Company.....	25,000.00
Millers National Insurance Company.....	18,400.00
The Ocean Accident and Guarantee Corporation, Limited....	15,000.00
The Connecticut Fire Insurance Company.....	9,000.00
Maryland Casualty Company.....	10,000.00
National Fire Insurance Company of Hartford.....	6,900.00
American Eagle Fire Insurance Company.....	12,500.00
The Continental Insurance Company.....	10,000.00
Royal Insurance Company.....	15,000.00
Hartford Fire Insurance Company.....	15,000.00
New Jersey Fire Insurance Company.....	13,000.00
Phenix Fire Insurance Company.....	10,000.00
North Western Mutual Fire Insurance Company.....	4,000.00
The Glen Falls Insurance Company.....	5,000.00
The Royal Exchange	10,000.00
The New Brunswick Fire Insurance Company.....	10,000.00
United States Fire Insurance Company of New York.....	10,000.00
National Liberty Insurance Company.....	10,000.00
St. Paul Fire and Marine Insurance Company.....	10,000.00
American Central Insurance Company.....	7,000.00
Rhode Island Insurance Company of Providence, R. I.....	5,000.00
Norwich Union Fire Insurance Company.....	5,000.00
Globe & Rutgers Fire Insurance Company.....	5,000.00
Niagara Detroit Underwriters	4,000.00
Superior Fire Insurance Company, Pittsburgh, Pa.....	5,000.00
Insurance Company, State of Philadelphia, Pa.....	2,000.00
Total	\$604,500.00

I hereby certify that the above is a true and correct report of the financial condition of the College, and of the receipts and disbursements of same for the biennium ending June 30, 1920. I further certify that the books have been well kept, that the report agrees with same, and that proper duplicate receipts and vouchers are on hand for all receipts and disbursements.

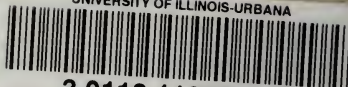
Very respectfully submitted,

JOHN L. COBURN,

Secretary.

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